

National Training on HIV and AIDS Research for Community Members and Beneficiary Group Representatives

Training Manual 2015



Nepal Health Research Council (NHRC)

Ramshah Path, Kathmandu, Nepal

The National Training on HIV and AIDS Research: Training Manual 2015 is developed by the Nepal Health Research Council (NHRC) of the Government of Nepal (GoN) by the support from the American People through United States Agency for International Development (USAID)-funded Saath-Saath Project (SSP).

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Government of Nepal
Nepal Health Research Council (NHRC)



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The focus of Nepal Health Research Council (NHRC) is on research capacity strengthening through training of individual researchers on various aspects of research. In the past, this has helped them to develop good quality research proposals and protocols. NHRC has developed a training manual on health research and has also frequently organized basic and advanced training courses. Generally, researchers/programmers from Government of Nepal, university students and members from research organization benefit from such trainings. However, training on HIV and AIDS research, particularly targeted for community members and beneficiary group representatives holding at least bachelor's degree in health-related subjects is not in practice in Nepal. Thus, the need to develop a training manual particularly on HIV and AIDS research was realized.

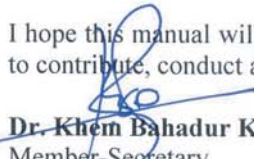
This manual is intended for training community members and beneficiary group representatives and provides:

- An orientation on HIV and AIDS research process
- Skills necessary to enable them to develop research proposals
- An understanding of ethical principles in HIV and AIDS research

This training manual has been developed with technical and financial support from USAID-funded Saath-Saath Project (SSP) through involvement of various experts as well as consultative process. A training was also conducted (May 18-23, 2014) in NHRC using this manual which provided valuable insights to make the training manual practical and relevant to the community members and beneficiary group representatives. During the course of developing this manual, we received many useful recommendations and suggestions from experts and technical agencies, many of which have been included in this manual. We thank all the contributors of this training manual including training participants. The following individuals (listed alphabetically) and agencies deserve our special appreciation and gratitude for their technical support and guidance:

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I hope this manual will help strengthen the capacity of community members and beneficiary group representatives to contribute, conduct and participate in HIV and AIDS related research in Nepal.


Dr. Khem Bahadur Karki
Member-Secretary
Nepal Health Research Council

ABBREVIATIONS

| | | |
|-------|---|---|
| ART | : | Antiretroviral Therapy |
| ARV | : | Antiretroviral |
| CBOs | : | Community Based Organizations |
| CSWs | : | Clients of Sex Workers |
| DoHS | : | Department of Health Services |
| DPHO | : | District Public Health Office |
| EIA | : | Enzyme Immune Assay |
| ELISA | : | Enzyme-Linked Immuno Sorbent Assay |
| ERB | : | Ethical Review Board |
| FCHVs | : | Female Community Health Volunteers |
| FGDs | : | Focus Group Discussions |
| FSWs | : | Female Sex Workers |
| GoN | : | Government of Nepal |
| IATA | : | International Air Transport Association |
| HP | : | Health Post |
| HSR | : | Health Systems Research |
| IBBS | : | Integrated Biological and Behavioral Surveillance |
| IRB | : | Institutional Review Board |
| IRC | : | Institutional Review Committee |
| KAP | : | Key Affected Population |
| MoHP | : | Ministry of Health and Population |
| MoP | : | Manual of Operation |
| MSM | : | Men who have Sex with Men |
| NCASC | : | National Centre for AIDS and STD Control |
| NGO | : | Non-Governmental Organization(s) |
| NHRC | : | Nepal Health Research Council |
| PCR | : | Polymerase Chain Reaction |
| PHCC | : | Primary Health Care Centre |
| PLHIV | : | People Living with HIV |
| PWIDs | : | People Who Inject Drugs |
| SHP | : | Sub-Health Post |
| SOP | : | Standard Operating Procedures |
| SSP | : | Saath-Saath Project |
| STI | : | Sexually Transmitted Infections |
| UN | : | United Nations |
| VDC | : | Village Development Committee |

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Introduction

Background

The HIV epidemic in Nepal is currently concentrated among key affected population. It is a 'concentrated epidemic' with People Who Inject Drugs (PWIDs), Men who have Sex with Men (MSM), and Female Sex Workers (FSWs) at its center (NCASC, 2012). The highest rates of HIV infection is found among these groups. In 80 percent of cases, the infection is transmitted sexually. The National HIV/AIDS Strategy 2011 has identified several key affected populations and proposes effective strategies and targeted intervention programs for these groups. To inform the development of the Strategy and the National HIV and AIDS Action Plan, the National Centre for AIDS and STD Control (NCASC) has included the Integrated Bio Behavioral Surveillance (IBBS) in its National Surveillance Plan. The aim of the IBBS is to (1) measure sexually transmitted infection (STI) and HIV and AIDS prevalence among key affected populations, (2) collect information on risk behavior, (3) assess the level of knowledge on HIV and AIDS, (4) monitor trends over time, and (5) understand the impact of current NCASC programs and plan effectively for future direction.

In Nepal, the IBBS is regularly conducted, and the first survey was conducted in 2004. The results of the second survey always tried to compare with the results to the first survey on the selected variables, and the third survey was compared with second survey, and so on. Different approaches were applied in order to collect the data around behaviours us that spread or prevent HIV. Both biological and behavioral data should routinely be collected from community people, and this is now widely accepted. While conducting the different rounds of IBBS, generally same group of community people might have been selected over and over again for study purpose. Why these groups have regularly been followed up? These people might understand more properly if someone from their community will clarify regarding the IBBS. This way they might participate in a friendlier manner. Therefore, community members and beneficiary group representatives need to be oriented and trained in HIV and AIDS research process.

The role of community people and beneficiaries in every stage (e.g. from participant selection to the dissemination) of research is very important in HIV and AIDS related research. Therefore, their understanding on HIV and AIDS research (its role for program planning, management and policy and advocacy) need to be increased. This may help in obtaining the data more systematically during the survey, and ensures quality, reliability and validity of data.

In Nepal, generally health and population related research training is carried out by independent research organizations although they are mainly focused on specific research study/tools and are primarily aimed for completion of research proposed by research organizations. Universities, governmental and Non-governmental Organizations (NGOs) also conduct health related research training but they are limited to their direct stakeholders. These trainings are not specifically designed for HIV and AIDS research; rather they focus on general social science and behavioral research.

The Nepal Health Research Council (NHRC), which was established in 1991 by the Government of Nepal (GoN) through an Act of Parliament, is an autonomous apex body. Since the establishment of NHRC, it has facilitated Ethical Review Board (ERB) and has approved more than 1212 health research proposals since 1991 to 2014. It has also focused on research capability strengthening through training of individual researchers on research methods which has helped them to develop good quality research proposal. NHRC has developed health research training curriculum and also frequently organized basic and advanced training course on health research. Generally, researchers/programmers from GoN, university students and members from research organization benefitted from such trainings. However, training on HIV and AIDS research, particularly targeted for community members and beneficiary group representatives holding at least Bachelor's degree in health related subjects is not practice

in Nepal. This stresses the need to develop a training curriculum particularly on HIV and AIDS research, and to roll out the training to the relevant stakeholders, community members and beneficiary group representatives.

In collaboration with NHRC and NCASC, United States Agency for International Development (USAID) funded Saath Saath Project (SSP) has developed a National Training Curriculum on HIV and AIDS Research, particularly targeted for community members and beneficiary group representatives. The training curriculum is expected to enhance beneficiaries' understanding of the purpose, method and possible use of HIV and AIDS research.

Goal

The goal of this curriculum is to train the community members and beneficiary group representatives to strengthen their capacity to contribute to the ability to conduct and participate in HIV and AIDS related research by themselves. It is anticipated that the participants from the community members and the beneficiary representative group may compete independently for funding and conducting HIV and AIDS related research in Nepal.

Objectives

The objectives of the HIV/AIDS Research Curriculum are:

- To orient the community members and beneficiary group representatives on the basic nature of the HIV and AIDS research process,
- To enable community members and beneficiary group representatives to develop small scale research proposal in the field of HIV and AIDS, and
- To raise awareness in general ethical principles to follow while conducting HIV and AIDS research in the field settings.

Guidelines for use of Manual

This training manual can be used as the guidelines for facilitation of HIV and AIDS research, particularly targeted to community members and beneficiary group representatives. This manual is designed for an interactive, and participatory group training but can also be used for self-study. This manual has 20 modules which is to be completed within 6 days of training.

These modules will provide an overview of research on HIV and AIDS including review of literature, methodology, formulating objectives and variables, data collection, sampling, sample size calculation, data management, analysis and preparing report.

Guidelines about how to start the Module

This manual is designed to instruct and guide those who are seeking to upgrade the knowledge and skills on HIV and AIDS related research process in Nepal. The facilitator should thoroughly be familiar with the content of each module to support those receiving the training. By reviewing these materials, the facilitator will be in better position to facilitate the training and ensuring a good learning experience for the trainees.

Guidelines about Facilitation Skills and Role

In most of the training workshop, the facilitator is the determining factor for the success of the training. It is essential to consider how a trainer should be prepared and what attitude he/she must adopt during the entire period of training period.

The training facilitator should read and study the training schedule and its contents carefully. She/he should be a good listener, encourage everyone to give her/his opinion, emphasize the knowledge that participants possess, strive to empower the participants, respects time-frame, deal with difficult participants without breaking the groups dynamics, respect all participants equally, manages to turn criticism into constructive ideas, and able to synthesize and wrap up.

Facilitator's role is to guide the participants through the learning process on the types of skills they need by moderating discussions, dealing with group dynamics, controlling a class, mastering questioning techniques, and along with good listening skills through appropriate approach encouraging participation and exchange of opinions and ideas. The facilitator is urged to follow the suggested module plan in this manual and highlight key messages, which helps the participants to understand and follow the information as well as retain it for later reference.

Guidelines about Participatory Approach

The participatory approach aims at achieving a behavioral change and building on participants' experience. Using this approach, the facilitator conveys the needed information while at the same time encouraging the participation of everyone and respecting the opinions of everyone in a non-judgmental way. Through questions and answers and sharing of experiences, the participants will better synthesize and internalize the knowledge. Use of cards, markers, newsprints, soft-boards and pin-boards are useful materials while adopting participatory approach during training workshop.

Participatory methods such as ice-breakers, group work, group discussion, case study and energizers are used in this manual.

Group work refers to the division of participants into smaller groups using specific criteria for specific tasks. An optimum group consists of five to eight people.

Group discussion enables participants to think about and then express their opinions on an issue. Listening to others may broaden or change their opinions and eventually help them to clarify their ideas, attitudes, values and behavior. In some cases, debating issues helps individuals to face conflicts and to reach consensus. In the group discussion, the facilitator needs to ensure that everyone gets a chance to speak and feel that she/he is able to contribute during the group discussion. It is useful to elect one member to report on the main points of the discussion to the whole group (rapporteur) and perhaps a second person to facilitate the discussion.

Case study refers to a real or imaginary account meant to illustrate certain facts and lead to certain lessons. Cases can be in the form of oral narrations, written materials, pictorials or audio-visuals. When using a case, study and understand it thoroughly; design objectives of using it and tasks for participants; allow participants enough time to understand it; guide the plenary discussion and summarize lessons drawn.

Icebreakers are short games meant to create an informal atmosphere and make participants comfortable with one another. They must be interactive and ensure that participants interact with one another. This is particularly important and helpful when participants have not met each other before.

Energizers are also games used during sessions to break monotony and ensure attentiveness among participants. They should be quick and enjoyable.

Class Exercises are exercises conducted within the class without forming one groups.

Group Exercises are exercises conducted in a group. The ideal size of a group comprised of people with varied backgrounds to allow active participation is generally five to eight.

Course Structure of the Manual and Training Schedule Framework

The research training curriculum/modules is structured into 20 modules lasting six days as follows:

Course Structure

The training workshop consists of 20 modules:

DAY ONE:

Module 1: Course Orientation

- a. Introduction of Participants and Facilitators
- b. Description of the Course
- c. Administrative Issues

Module 2: General Introduction to Research

- a. Meaning of Research and its Rationale
- b. Definition, Purpose and Characteristics of Research
- c. Research Specifically on HIV and AIDS

Module 3: Writing Research Question for HIV and AIDS Research

- a. Steps for Idea Generation and its Sources
- b. Formulation of Research Questions, its Types and Criteria
- c. Creating Research Questions on HIV and AIDS

Module 4: Identifying and Prioritizing Problems for HIV and AIDS Research

- a. Diagnosis of Problems on HIV and AIDS areas
- b. General Problems on HIV and AIDS in Nepal
- c. Criteria for Prioritizing the HIV and AIDS Research

DAY TWO:

Module 5: Analysis and Statement of the Problem

- a. General Concept for Initiating the Problem Analysis
- b. General Steps in Analyzing the HIV and AIDS Problem
- c. Formulating the Problem Statement

Module 6: Review of Available Literatures on HIV and AIDS

- a. Rationale for Reviewing the Literatures
- b. Possible Sources of Literatures on HIV and AIDS
- c. Key Steps in Searching the Literatures

Module 7: Formulation of Research Title and Objectives

- a. Importance and Length of the Title
- b. Rationale of Objective Formulation, Its Criteria and Types
- c. Examples of Research Titles and Objectives

Module 8: Introduction to Methodology for conducting Research on HIV and AIDS

- a. Basic Concepts on Methodology
- b. General Introduction to Qualitative and Quantitative Methods and its Use in HIV and AIDS research
- c. How Research Questions and Objectives Guide Methods

DAY THREE:

Module 9: Identification of Variables and Scales of Measurements

- a. Meaning of Variables and its Rationale
- b. Types of Variables
- c. Scales of Measurements

Module 10: Study Types (includes only basic study types for HIV and AIDS research)

- a. Exploratory Study / Qualitative Study / Case Study
 - b. Cross-sectional Descriptive Study / Prevalence Study
 - c. Longitudinal Study / Incidence Study
 - d. Integrated Biological and Behavioral Surveillance (IBBS) Surveys
-

DAY FOUR: Module 11: Data Collection Tools and Techniques

- a. Overview of Data-collection Tools and Techniques
 - b. Observation Check list and Techniques
 - c. Design of Interview Questions/Checklists (including techniques) and Questionnaires Preparations in Appropriate Languages
 - d. Checklist (including questioning routes) for Focus Group Discussion (FGD) and Technique
 - e. Tools, Reagents and Chemicals used in Laboratory Settings and Biological Specimen Collection Method and Technique including Quality Control Tests
 - f. Standard Operating Procedure (SOP) for Tools and Techniques
 - g. Ethical Principles adopted during Data Collection Period
-

DAY FIVE: Module 12: Sampling Techniques and Sample Size Calculation

- a. Meaning of Sampling and its Rationale
- b. Steps in Sampling
- c. Types of Sampling Methods/Techniques
- d. Sample Size Calculation

Module 13: Plan for Data Collection

- a. Rationale for Data Collection Planning
- b. Stages in the Data Collection Process

Module 14: Pretesting the Data Collection Tools and Techniques

- a. Meaning of Pretesting and its Rationale
 - b. Evaluation of the Basic Aspects of Methodology during Pretesting
-

DAY SIX: Module 15: Data Management

- a. Plan for Data Processing and Cleaning
- b. Plan for Data Analysis

Module 16: Plan for Research Administration, Monitoring and Utilization of Results

- a. Meaning of Project Administration and its Rationale
- b. Meaning of Project Monitoring and its Rationale
- c. Planning for the Utilization and Dissemination of the Research Results to Stakeholders and Community People
- d. Planning of Ethical Approval Process from Institutional Review Committee (IRC) or Ethical Review Board (ERB)

Module 17: Preparation of Budget

- a. Rationale of Budget Preparation
- b. Budget Preparation and Its Format
- c. Budget Justification

Module 18: Fieldwork Activities

- a. Preparing Field Work Manuals
- b. Training Interviewers/Data Collectors (includes training objectives)
- c. Ethical Consideration (how to use Informed consent forms)

Module 19: Work Plan

- a. Meaning of Works Plan and its Rationale
- b. Key Work Scheduling and Planning Techniques

Module 20: Preparing a Report

- a. Contents of Report
- b. Writing References
- c. Annex Preparation

Training Schedule Framework

| Day | | Module (9:15-10:45 am) | Tea Break (10:45-11:00 am) | Module (11:00 am-12:30 pm) | Lunch Break (12:30-1:30 pm) | Module (1:30-3:00 pm) | Tea Break (3:00-3:15 pm) | Module (3:15-4:45 pm) | Daily Evaluation (4:45-5:00 pm) |
|--------|-------------------------------------|------------------------|----------------------------|----------------------------|-----------------------------|-----------------------|--|-----------------------|---------------------------------|
| First | Opening Pre-testing | 1 | | 2 | | 3 | | 4 | |
| Second | Daily Warm up Session (9:00-9:15am) | 5 | | 6 | | 7 | | 8 | |
| Third | | 9 | | 10a | | 10b,c | | 10d | |
| Four | | 11a,b,c | | 11d | | 11e | | 11f,g | |
| Five | | 12a,b,c | | 12d | | 13 | | 14 | |
| Six | | 15,16 | | 17,18 | | 19,20 | | | |
| | | | | | | | Session Evaluation, Post Testing, Overall Evaluation, Closing (3:00 to 3:45 pm), then Tea Break at 3:45 pm | | |

Users of this Manual

Any kind of researcher/trainer/facilitator who would like to conduct basic training in the field of HIV and AIDS research should use this manual.

Target Group for Training

The target group for training is community members and beneficiary group representatives.

MODULE 1

Course Orientation

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Know each other including their training facilitators,
- (b) Understand the training objectives, its modality and various modules to be adopted during the course and
- (c) Aware about administrative aspects of the training workshop.

Time Frame: 90 minutes

Materials: Copies of Training Schedules and Modules, Pre-test Questionnaires, Computer, Audiovisual Equipment or with LCD Projector and Screen, Flip Chart, Board Markers, Name Tag holders for Participants and Training Facilitators

Teaching Methods/Process: Lecture, Assessment/Presentation, Discussion and Brainstorming

Course Contents:

- a. Introduction of Participants and Facilitators
- b. Description of the Course
- c. Administrative Issues

1.1. Introduction of Participants and Trainers/Facilitators (Time: 60 minutes)

The opening session is started with welcoming the participants, giving remarks, and deliberation of training goals and objectives.

The training facilitator asks all the participants to be in pairs and introduce each other. It is essential to ask all the participants to spend 2 to 3 minutes with each other in order to note her/his name (including their nick name), place of origin, place of current work, their professional experience, occupation/profession, likes/ dislikes, hobbies, previous research related experiences, and their expectation from the training.

The training facilitator asks each partner in the pair to introduce each other to the rest of the class following the guideline mentioned above. After the introduction, names and affiliated institution can be written on a name badge or card and clearly displayed. The introduction should not take more than 45 minutes.

The training facilitator needs to comment on the expectations shared to confirm what will be covered (or not) during the workshop.

The training facilitator needs to establish “group norms”.

- Brainstorm on what should be the guiding principles for the group and only put down what the group has agreed upon and participants commit to respect.

- Guide participants in setting ground rules/training norms and ask participants to respect that the content of the training and the experiences of each participant are: confidential to the group, without reference to the work hierarchy, to be based on an attitude of mutual support, and disciplined but informal (using first names only, not professional titles or caste).
- Explain that the key points emerging from each day will be summarized the following morning and that the contents of each day sessions will be presented so the participants know what to expect.

1.2 Description of the Course (Time: 20 minutes)

The training facilitator presents the overall goal and major objectives of the training workshop and the format of the training. It should be clear to all participants that they will each work as part of a small group to develop a concept research proposal in the field of HIV and AIDS areas.

Facilitator should emphasize the uniqueness of each participant's background and experience, pointing out how important it will be for everyone to contribute to the development of the concept research proposal in the field of HIV and AIDS and to learn from each other.

Facilitator should distribute the training manual to all the participants, and describe how the course will be structured and how the training document will be used. After this, training coordinator should explain briefly about 20 modules used in the training manual.

There are 20 modules for entire period of training workshop. Day one will cover four modules. Module first will be started with the course orientation, while second module will talk about an introduction of research, wherein meaning of research and its rationale, definition, purpose and characteristics of research, and research specifically on HIV and AIDS will be presented. Third module will cover ideas for HIV and AIDS research and raising questions, wherein steps for idea generation and its sources, formulation of research questions, its types and criteria, and creating research questions on HIV and AIDS will be presented. Fourth module will give lots of emphasis on identification and prioritization of problems for HIV and AIDS research. In this, diagnosis of problems on HIV and AIDS areas, general problems on HIV and AIDS in Nepal, and criteria for prioritizing the HIV and AIDS research will be talked.

Similarly, day two will cover four modules, wherein analysis and statement of the problem, review of available literatures on HIV and AIDS, formulation of research title and objectives, and introduction to methodology for conducting research on HIV and AIDS will be presented. The session will be started with general concept for initiating the problem analysis, steps in analyzing the HIV and AIDS problem, and formulating the problem statement. Immediately after that literature review process and its key steps including possible sources of literatures on HIV and AIDS will be presented. There will be demonstration of research titles and objectives formulation including its criteria and types. Participants will be orientated regarding the basic concepts on methodology, general introduction to qualitative and quantitative methods and its use in HIV and AIDS research including deliberation towards as how research questions and objectives guide methods.

There will be two modules during day three namely identification of variables and scales of measurements, and basic study types for HIV and AIDS research. Meaning of variables and its rationale, types of variables, and scales of measurements will be taught during the beginning of the session of the third day. After that participants will be trained in various types of study designs particularly exploratory study/qualitative study, cross-sectional descriptive study/prevalence study, longitudinal study/incidence study, and IBBS surveys.

Fourth day is basically for emphasizing an overview of the data collection tools and techniques, wherein design of interview questions/checklists (including techniques) and questionnaires preparations in appropriate languages,

observation check list and techniques, checklist (including questioning routes) for FGD and technique, tools, reagents and chemicals used in laboratory settings and biological specimen collection method and technique including quality control tests, SOP for tools and techniques including ethical principles adopted during data collection period will be explained.

Day five will cover three modules, wherein sampling techniques and sample size calculation, plan for data collection, pre-testing the tools and techniques will be presented. Meaning of sampling, its steps, types of sampling techniques and sample size calculation will be taught during the beginning of the session of the fifth day. After that participants will be trained in data collection planning, stages in the data collection process, meaning of pretesting and its rationale, and evaluation of the basic aspects of methodology during pretesting will be taught.

Day sixth is the last day of the training workshop. There will be six modules, wherein data management, plan for research project administration, monitoring and utilization of results, work plan and preparation of budget. Plan of data processing and cleaning including its analysis, will be taught during the beginning of the session of the sixth day. Immediately after that meaning of work plan and its rationale; key work scheduling and planning techniques; meaning of research project administration and monitoring; planning for the utilization and dissemination of the research results to stakeholders and community people; planning of ethical approval process from IRC or ERB; budget preparation; its format including budget justification will be presented in three different sessions. Field-work activities and report preparation will also be taught. Participants will be trained for preparing the field work manuals, training interviewers/data collectors, and using informed consent forms while adopting ethical norms and standard during data collection process. After that participants will be given the concept to write the report, its contents, references, and annex preparation.

After explaining all the modules in brief, training facilitator should explain the modality to be adopted for group work, group discussion and class exercise. It is indicated that the directions for group work and some sessions of the modules having class exercises, are presented in boxes. Some sessions of the modules also have class exercises, which are presented in boxes with single lines. Case studies will be provided during class exercise as well as group work, wherever applicable during the sessions. Icebreakers and energizers will be used during the sessions.

Training facilitator should stress that the outcome of the workshop will be a small scale research proposal in the field of HIV and AIDS, which will be written, step by step, by the participants.

During the registration process in the morning of day one of the training workshop, the training facilitator should give each participant the questionnaire (Annex – I). The same questionnaire will be distributed during the evaluation session at the end of the training workshop. Training facilitator then compare the two to determine what was learned, and areas that need to be strengthened or followed up. Apart from administering pre-test and post-test questionnaire, there will be daily session evaluation (Annex – II), and one questionnaire (Annex – III) will be the overall evaluation of the training workshop. The training facilitator will provide the feedback to their resource person on each day evaluation. These can be helpful in determining the level of understanding and learning during the course of the training. The resource persons and training facilitator should meet at the end of each day to evaluate the day's work, and to plan and modify the style of facilitation skills during training program without much deviation what is explained in the training manual as and when necessary.

1.3. Administrative Issues (Time: 10 minutes)

The training facilitator should inform all the participants about the arrangement for breaks and lunch as well as other information relating to housekeeping, example: fire exist, toilets, and any other administrative issues.

MODULE 2

General Introduction to Research

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Define meaning of research and its rationale,
- (b) Define research, its main purpose and types,
- (c) Describe the major characteristics of research and
- (d) Orient research specifically on HIV and AIDS.

Time Frame: 90 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipment with LCD Projector and Screen

Teaching Methods/Process: Lecture, Assessment/Presentation, and Discussion

Course Contents:

- a. Meaning of Research and its Rationale
- b. Definition, Purpose and Characteristics of Research
- c. Research Specifically on HIV and AIDS

Game:

- ZIPP-ZAPP

2.1 Meaning of Research and its Rationale (Time: 15 minutes)

Whenever the word “research” is spoken, most of the people image of a person in a white laboratory coat doing something in the laboratory environment. The word “research” was actually originated from the French word “recherche”, which means to travel through or survey. When we break the word research, it becomes “re” and “search”. That is search after search and search. Why? It is a careful search or inquiry into any subject matter. The purpose of such repeated search is to thoroughly understand the problem or issue or phenomenon and find the suitable and effective solution to the problem or strategy to deal with the issue or the phenomenon. Such solution or strategy adds to our stock of knowledge in dealing with the problem or the issue. However, much research is done without there being a problem but with the intent of knowing more about something.

Research refers to a search for knowledge. Research simply put, is an attempt to discover answers to problems (intellectual and practical) through the application of scientific method. The term ‘research’ refers to a critical, careful and exhaustive investigation or inquiry or examination. Research is more than finding solutions to problems and it is generating new knowledge which may address a problem but also may not and simply tell us more about something that previously was less understood. Research needs to be conducted in a logical, orderly, and systematic fashion. It is an organized attempt to obtain facts; it searches for the truth in human feelings, values, behaviors, activities, processes, elements, and relationships. It also is about studying new medical products and drugs. Research can also be economic, psychological, and social/community.

A lot of what we do in our daily lives is based on common sense, what we have learnt from others or what we have learnt through personal experience or observation. We might have eaten some type of food and got sick. Therefore, we never eat this food again because it makes us sick. Our personal experiences are limited. We may be mistaken in our observations, and fail to see things clearly because of our biases. But sometimes common sense is not the best approach and sometimes there are conflicting theories about what is best or what works in a particular situation. Moreover, what works in one situation or for one condition might be ineffective or even dangerous in another, or when combined with other measures. Common sense approaches may overlook the impact of external factors which may contribute to what is observed. Even in the domain of healthcare, there are gaps in knowledge, theories about how something might work better and ideas for improvement. As healthcare professionals cannot afford to take risks, research is needed.

2.2 Definition, Purpose and Characteristics of Research (Time: 40 minutes)

Research is the systematic collection, analysis and interpretation of data to answer a certain question or solve a problem.

The main purpose of research is to help plan and gather information on a certain topic. Research evaluates or investigates a theory in a scientific and ethical manner before that theory is adopted into wide scale practice.

Purposes of Research

- Generating new knowledge,
- Improving understanding,
- Application testing,
- Comparing or validating best practices, and
- Helping with decision making

Characteristics of Research

- It demands a clear statement of the problem,
- It requires a scientific plan which is never modified during the course of the research,
- It takes into consideration human participant protection (ethics),
- It builds on existing data, using both positive and negative findings, and
- New data should be collected and be organized in such a way that they answer the original research question(s).

Types of Research

In general, there are three types of research namely basic, applied and action research.

Basic research aims to discover new knowledge. It is motivated by intellectual curiosity and interest in a specific problem area. Fundamental knowledge about such phenomena as the environment, space, human behavior, exercise, and human gene makeup is sought. The majority of this research is done in highly controlled experimental laboratory settings, often with animal subjects, selected variables have to be manipulated for maximum control. It includes understanding physiological pathways, drug mechanisms and modes of action, toxicity and carcinogenicity. Following example illustrates what might be considered as basic research study:

Helper T-cells protect the body's immune system by arranging forces to fight off infection. The HIV virus seizes control of helper T-cells, causing T-cell numbers to drop, making the body vulnerable to disease. Although they appear similar, T-cells are not all the same. "Virgin" cells are those that have never encountered infection, while experienced ones are known as memory helper T-cells. The researchers examined why HIV prefers to attack memory helper T-cells and avoid their similar associates, virgin T-cells. Unlike virgin helper T-cells, memory T-cells are very mobile and constantly on the go. The researchers believe this momentum entices the HIV virus, making the memory cell more vulnerable. Inside a moving memory cell, the moving edge looks like a waterfall. The cell's supporting

bone, or cytoskeleton, acts like a muscle pushing the cell to roam. The researchers looked at how HIV infects those memory cells by going into the center, to the nucleus. In order to reach the nucleus, the virus has to cross the cytoskeleton, in other words pass over a wall. An advantage for HIV is that it is able to mutate very fast. Memory cell soldiers do not recognize the HIV virus, rendering our immune system defenseless against it. In addition to this, the virus kills many memory helper cells. The way HIV mutates makes it a tough target for drugs. Successfully tackling the virus may be better reached by focusing on the cell, as opposed to the virus itself. The researchers decided their new strategy should aim at a cellular target that HIV depends on to exist, and then shutting it down. For example, if the cell was a house and the virus needed electricity to live in the house, researchers could target electricity. The tricky part will be shutting it down without impacting healthy cells along with it.

Applied research is necessary to identify priority problems and to design and evaluate policies and programs that will deliver the greatest health benefits, making optimal use of available resources. Applied research is problem oriented, and is directed towards the solution of an existing problem. In another word, it is usually focused on a problem that needs to be solved to improve healthy practice. Following example illustrates what might be considered as applied research study:

Great advances have been made over the past decade in behavioral research on how to help persons avoid contracting HIV infections (primary prevention) and how to reduce or alleviate adverse consequences among persons who are living with HIV disease (secondary prevention). Researchers propose an updated agenda for behavioral research on HIV prevention implementing accelerated community trials of promising behavior change models, conducting trials of community-level interventions on a large scale and focused on populations most vulnerable to HIV infections, establishing partnerships between HIV research and community service organizations, integrating efforts from across psychology disciplines to advance and refine HIV prevention interventions, and mobilizing interdisciplinary HIV prevention resources and communication mechanisms to rapidly translate research findings to community and public policy arenas.

Action research involves some form of “action”. It refers to a process which alternates continuously between inquiry and action, between practice and innovative thinking. It is an approach for understanding how human beings interact with one another, and how we respond to events and situations. It is concerned as much with the process of inquiry as with its ‘findings’: any research process creates relationship, and action research is concerned that its long-term impact on relationship. It proceeds in a series of “cycles”, in each of which we plan, act, observe, reflect and then draw up a revised plan.

Health systems research (HSR) has the flavor of action research, and this is also considered as operational research. The aim of the HSR is to provide health managers at all levels, as well as community leaders, with the relevant information they need to make decisions on problems they are facing. It is multi-disciplinary in nature because even simple research that is conducted at the operational level may require research skills from different disciplines to provide sufficient and relevant information to support decision-making.

The participatory nature of HSR is one of its major characteristics. To ensure that the research is relevant and appropriate, everyone directly concerned with a particular health or health care problem should be involved in the research project(s) focused on it. This may include policymakers, managers from the health and other public services involved, health care providers and the community itself. Their involvement is critical if the research activities are to make a difference:

If decision-makers are only involved after completion of the study, the report may just be shelved. If staffs of health and other public services are only involved in data collection and not in the development of the proposal or in data analysis, they may not be motivated to collect accurate data or carry out the recommendations. If the community is only requested to respond to a questionnaire, the recommendations from the study may not be acceptable. If professional researchers are not involved in the implementation of recommendations, they may have little concern for the feasibility of the recommendations.

The roles that various types of participants will play in the research project will depend on the level and complexity of the particular study as well as its area of focus. Some projects are very complex and may need expertise from several levels, sectors and disciplines. Others may focus on simpler problems and require a more modest set-up. Health personnel may even play a major role in simple studies focusing on practical problems in their own working situations, although their projects may require assistance from researchers with skills in relevant disciplines.

2.3 Research Specifically on HIV and AIDS (Time: 15 minutes)

There are variety of research specifically conducted on HIV and AIDS in Nepal. Following are some of the research projects registered in the NHRC since 2008:

- 1) An Assessment of HIV Risk in Nepal from Sex Workers of Nepali Origin in India
- 2) Assessment of Quality of Life of People Living with HIV and AIDS
- 3) A Study of Cardiovascular related Risk Factors in People being Treated for HIV in Nepal
- 4) A Study on Knowledge and Attitude regarding Prevention of HIV/AIDS among Female Sex Workers (FSWs) of Kathmandu Valley
- 5) A Study on the Socio-demographic and Behavioral factors associated with Injecting Drug use or HIV infection among Female Drug Users in Kathmandu Valley, Nepal
- 6) Baseline Study in Bangladesh, India and Nepal enhancing Mobile Populations' access to HIV/AIDS Services Information and Support
- 7) Comparative Study of Awareness regarding HIV/AIDS among Transportation Workers and FSWs of Sunsari and Morang Districts
- 8) Cost for receiving ART Services and impact of ART on Health, Income and Productivity of People living with HIV/AIDS in Kathmandu Valley
- 9) Formative Research to Assess HIV Risk among Males who have Sex with Males (MSM) in Nepal
- 10) Effect of the ART among the People living with HIV (PLHIV) at Tribhuvan University Teaching Hospital, Kathmandu
- 11) Epidemiological Study on HIV and other Infections among Prisoners of Selected Female Prisons
- 12) Factor Associated with Adherence to Antiretroviral Medication in HIV-infected Patients: A Cross-sectional Study in Kathmandu District
- 13) HIV-related Risks, Vulnerability and Social Networks among MSM and Tesro Lingi (Third Gender) People in Five Study Sites in Nepal
- 14) HIV status and Health Seeking Behavior of Vulnerable Children and Youth in Bagmati District, Nepal
- 15) Integrated Bio-Behavioral Survey (IBBS) among Injecting Drug Users in Kathmandu Valley, Pokhara Valley, Eastern Tarai and Western to Far Western Tarai; and MSM in Kathmandu Valley
- 16) IBBS among FSWs, Male Labor Migrants and Wives of Labor Migrants in Various Parts of the Country
- 17) IBBS among Wives of Migrants in Four Districts in the Far Western Region of Nepal
- 18) IBBS among Male Labor Migrants in Six Districts in Mid and Far Western Region of Nepal
- 19) IBBS surveys among FSWs and Injecting Drug Users in Kathmandu and Pokhara Valley
- 20) Knowledge, Attitude and Practices of HIV/AIDS among wives of migrant's workers in India
- 21) Knowledge, Attitude and Practice on HIV/AIDS: A Case Study of Spouses of Labor Migrants to India in VDC's of Mahendranagar, Nepal
- 22) Knowledge of FSWs on HIV/AIDS in Kathmandu Valley
- 23) Knowledge, Attitude and Practice on Tuberculosis (TB) and Co-infection of TB and HIV in Nepal
- 24) Measuring the Stigma and discrimination experienced by people living with HIV
- 25) Micronutrients intake and their relation to disease progression and morbidity among PLHIV/AIDS in the Kathmandu Valley, Nepal

- 26) Modeling the transmission of HIV and program responses in Kathmandu, Nepal: the interpretation and use of HIV and Sexually Transmitted Infections (STI) behavioral and biological surveillance data
- 27) Molecular Epidemiology of HIV-1 in Nepal: Central Region
- 28) New Dynamics in FSW and potential for use of new technology for HIV prevention program
- 29) PLHIV Survey on assessing their perception of access to prevention, treatment, care and support, satisfaction with services, stigma, livelihood and serological assessment of Hepatitis B and C co-infection
- 30) Psychosocial predictors of HIV/AIDS risk behaviors in Nepalese street youth
- 31) Socio-Cultural Attitude Towards HIV/AIDS: A Contemporary Situation Analysis of People Living with HIV and AIDS in Gorkha District
- 32) Structural factors associated with an increased risk of HIV infection among men who have sex with men in Nepal
- 33) Study on Quality of life and livelihoods of PLHIV in Achham and Kanchanpur Districts of Nepal
- 34) Syringe coverage and HIV risk behaviors among needle exchange program users in Pokhara, Nepal
- 35) The Economic Burden of HIV/AIDS upon Households in Nepal.

2.4 Game (Time: 20 minutes)

■ ZIPP-ZAPP

Objective: To improve setting specially at the beginning of a workshop

The ZIPP-ZAPP game is an icebreaker. After the games the participants will know each other by names. It also helps to change sitting positions. To begin the participants need to be in circle. The facilitator walks around in the circle of seated participants. He/she points here and there on a participants and says; "ZIPP or ZAPP". At "ZIPP" the participant must tell the name of his/her right neighbor, at "ZAPP" the name of left neighbor. After some "ZIPP" and "ZAPP", the facilitator says "ZIPPZAPP" and all participants must get up and change the place. Now "ZIPP" and "ZAPP" goes on repeatedly two to three rounds.

MODULE 3

Writing Research Questions for HIV and AIDS Research

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Describe the steps for idea generation and its sources,
- (b) Formulate research questions,
- (c) Describe the criteria for good research questions,
- (d) Describe the types of research questions and
- (e) Create HIV and AIDS related research questions.

Time Frame: 90 minutes

Materials: Flip Chart, Board Markers, Computer and LCD Projector with Screen

Teaching Methods/Process: Lecture, Brainstorming, Plenary session, Assessment/Presentation, and Discussion

Course Contents:

- a. Steps for Idea Generation and its Sources
- b. Formulation of Research Questions, its Types and Criteria
- c. Creating Research Questions on HIV and AIDS

Group Exercise:

- Research Statements
- Small Group Discussion

3.1 Steps for Idea Generation and its Sources (Time: 15 minutes)

Idea is a thought or collection of thoughts that generate in the mind. An idea is usually generated with intent, but can also be created unintentionally. Idea often forms during brainstorming sessions or through discussions. It is an opinion or belief - "my idea is that a telephone call is more personal than email," represents an opinion of which method of communication is more personal. Ideas are fragile. They have the power to inspire, transform, and build. It is the process of generating, developing, and communicating new ideas. It consists of concrete steps that shuttle raw ideas toward maturation.

First step of idea generation would be to become enthusiastic and curious. If a person does not seem excited by his/her idea, why should others be? Enthusiasm makes people dramatically more receptive.

Second step, following an idea's existence, it needs a means of being expressed. The greatest ideas are worthless if we keep them to ourselves. Making ideas concrete in writing or another medium, fixes the idea. Ideas are personal. Wherever ideas are fixed and shared, the roles of the idea-sharer and the idea-receiver need to be made explicit. An environment that fosters confidence, trust, and encouragement is requisite to receiving ideas from anyone.

Third step, now that an idea has been shared; it is the role of the idea-receiver to assess the feasibility of the idea. The idea-receiver should be transparent about the evaluative process. This extends the confidence of the idea-sharer.

Sources of ideas

Ideas might have been drawn while

- Reviewing the Literature
- Intuition
- Clinical Observations
- Discussions and Brainstorming with Colleagues
- District, Regional and National level Meetings and Seminars
- Monitoring the Data and
- Day-to-day Experience.

Once an idea is developed, how do we decide that it is “researchable”? We need to look for existing evidence (local, national, international), whether it would pass the “so what” test or not, its magnitude, importance (local, national), priority, and whether it is feasible and ethical to go ahead with this idea or not, and some kinds of pertinent ethical issues if we really like to go for working with the generated ideas. At this stage, we also need to think about the resources in order to work on those ideas.

3.2 Formulation of Research Questions, its Types and Criteria (Time: 15 minutes)

Formulating appropriate research question is the most critical part of the research as it defines the whole process, it guides our arguments and inquiry, and it provokes the interests of the reviewer. While formulating research question, we need to step away from our computer; and consider what comes up in our mind as this could be our original thoughts. We need to listen to ourself and start formulating our question(s) by following our own interest(s). If it does not interest us in the beginning, it will certainly become very difficult to write at the later stage.

Next, we need to extensively search our probable topic(s) with the consideration of ‘what have people said about it?’ ‘How have they framed their research topic?’ ‘What is already known or not known about the research topic?’ ‘What gaps, contradictions, or concerns arises while reading?’. Once we have done these activities, we can go back to our computer or note pad and start crafting the research question(s).

We need to start with a simple research question, which must be action-oriented. The way we ask a question determines how we will answer it.

Types of research questions: Basically there are three types of research questions.

Level I question will be framed when there is little to no literature is available on the topic and the purpose is to describe what is found as it exists naturally. It may lead to exploration and result in a complete description of the topic. For example, What are the characteristics of HIV and AIDS patients?, What is the situation of HIV infection in general population?, and What are the factors responsible to cause HIV?

Level II question will be framed when there is knowledge about the topic but relationships among the variables are not well known. It may build on the results of level I studies, and look for relationships between the variables. For example, are certain factors associated with the HIV infection among females of Far-Western Region?, is there gender difference in having HIV infection? And what is the relationship between condom use and HIV infection among male patients?

Level III question will be framed when there is a great deal of knowledge about the topic and the purpose of the study is to test the theory through direct manipulation of the variables. It builds on the results of previous research and lead to interventional designs. For example, Is patient satisfaction increased with positive attitudes toward

self-care?, Which of two drugs give better results in increasing CD4 counts among AIDS patients?, and What is the effect of a particular strategy/intervention in lowering HIV infection among Key Affected Population?

Criteria of Good Research Question

It has been suggested that the use of the FINER criteria in the development of a good research question. The FINER criteria highlight useful points that may increase the chances of developing a successful research project. A good research question should specify the population of interest, be of interest to the scientific community and potentially to the public, have clinical relevance and further current knowledge in the field (and of course be compliant with the standards of ethical boards and national research standards).

FINER criteria for a good research question

| | |
|-------------|--|
| Feasible | Assess to an adequate number of research participants Adequate technical expertise Affordable in time & money Manageable in scope |
| Interesting | To investigator, peers and community To your institution |
| Novel | Original study Confirms, refutes or extends previous findings |
| Ethical | Amenable to a study that ERB/IRC will approve Culturally appropriate in the chosen research setting |
| Relevant | To scientific knowledge To clinical and health policy and Programmes To future research direction |

3.3 Creating Research Questions on HIV and AIDS (Time: 10 minutes)

1. What are sexual behaviors related to HIV among FSWs in the Pokhara valley?
2. What is the HIV and STI prevalence trend among FSWs in Pokhara district?
3. What are HIV and STI-related risk behaviors among PWIDs in Kathmandu valley?
4. What is the situation of HIV and STI-related risk behavior among returnee male labor migrants from India and elsewhere?
5. What is the situation of knowledge of HIV and STI as well as sexual and injecting behaviors among FSWs in Pokhara valley?
6. What is the situation of knowledge of HIV and AIDS among wives of migrant labors in four districts of Far-Western Region of Nepal?
7. What is the situation of knowledge of using condoms among returnee male labor migrants from India and elsewhere?
8. What is the situation of knowledge and attitude regarding prevention of HIV and AIDS among FSWs of Kathmandu valley?
9. What about the situation of knowledge, attitude and practice of HIV and AIDS among wives of migrant's workers in India and elsewhere?
10. What is the situation of HIV status and health seeking behavior of vulnerable children and youth in Achham district of Nepal?
11. What is the situation of stigma and discrimination faced by the PLHIV within their family and in the community?
12. What is the prevalence of HIV among returnee male labor migrants from India and elsewhere?

13. What is the prevalence of HIV among truckers who drive on east-west highways in Nepal?
14. What is the cost for receiving ART services by the PLHIV in Pokhara valley?
15. What is the situation of economic burden of HIV and AIDS upon households in Nepal?
16. What is the risk of having HIV among MSM in Nepal?
17. What is the basic nature of HIV-1 in Nepal?
18. What are the psychosocial predictors of HIV and AIDS risk behaviors in Nepalese street youth?
19. What is the situation of socio-cultural attitude towards HIV and AIDS in the selected communities of Nepal?
20. What is the quality of life of PLHIV in Far-Western Region of Nepal?
21. What are the HIV-related risks, vulnerability and social networks among MSM and third gender in the selected areas of Nepal?
22. Are PWIDs exposed to available HIV and STI services in Kathmandu?
23. Are truckers who drive on east-west highways exposed to available HIV and STI services in Nepal?
24. Do the mobile people have access to HIV and AIDS services information and support?
25. Are the PLHIV satisfied with the services provided by the GoN ?
26. Is there a difference in awareness regarding HIV and AIDS among transportation workers and FSWs of Sunsari and Morang districts?
27. Are there any associations between knowledge of using condoms and their HIV infection among returnee male labor migrants from India and elsewhere?
28. Are there any associations between risk behaviors and infections with HIV among FSWs in Pokhara valley?
29. Are there any association between HIV and other infections among selected prisoners?
30. What are the socio-demographic and behavioral factors associated with HIV infection among drug users in Pokhara valley?
31. What is the dietary pattern including micronutrients intake and its relation to disease progression and morbidity among PLHIV in the Kathmandu valley?
32. What are the cardiovascular related risk factors in people being treated for HIV in Nepal?
33. What are the factors associated with an increased risk of HIV infection among MSM in Nepal?
34. What is the effect of the ARV therapy among the PLHIV at the Tribhuvan University Teaching Hospital, Kathmandu?
35. What is the effect of STI, HIV and AIDS awareness programs for reducing the trend of HIV incidence in Nepal?

3.4 Group Exercise (Time: 50 minutes)

The training facilitator should randomly divide all the participants into smaller groups consisting of five to eight people in one group. Following statement needs to be given in the group.

Types of Clients of FSWs

The clients of FSWs in Pokhara came from a wide range of professional backgrounds. More than two-fifths of respondents (45.5 percent) reported that different types of businessmen were their most frequent clients. Similarly, foreign employees, transport workers/drivers, and service holders/officers/doctors were reported as the respondents' frequent clients by 42 percent, 41.8 percent, and 38.6 percent of the respondents, respectively. About a quarter (21.2 percent) of the respondents was also frequently visited by contractors, and about the same

proportion of them mentioned that students (20.3 percent) and migrant workers/industrial workers/wage labors (20 percent) were frequent clients. Another 14.8 percent of FSWs said their regular clients were police and army personnel.

Knowledge about Condoms

Condom promotion has been one of the important components of HIV and AIDS awareness campaigns. Such campaigns have focused on raising awareness about condoms with the help of various Information, Education and Communication (IEC) materials disseminated through print as well as electronic media.

All of the participants had heard of condoms before Television was the most popular source of information on condoms, as it was mentioned by almost 92 percent of the surveyed sex workers. The pharmacy was the second most popular information source (89 percent), followed by friends/neighbors (82 percent), billboards/signboards (81.2 percent), newspapers/posters and radio (79.7 percent each), NGOs (78.8 percent), clients (75.9 percent), hospitals (60.3 percent), and health worker volunteers (29.9 percent). Other sources of the survey participants' knowledge about condoms were cinema halls, community events/trainings, health posts/centers, comic books, and street dramas organized by different organizations/groups.

Fifty two percent of the respondents were aware of female condoms. The majority of the respondents (76.7 percent) had heard about female condoms from NGO staff, while 24.4 percent had come to know about female condoms from their friends/relatives or neighbors. Although 43.2 percent of the respondents considered female condoms useful, while only 4.4 percent (8 respondents) of those who had heard of it had ever used one. Twenty five percent of them (2/8) had used a female condom within a month before while other had used it earlier. Five out of the eight respondents who had ever used a female condom had used it with their regular client.

Condom Use with Clients

More than three-fourths (78.8 percent) of the respondents had used a condom with their last client. Among them, 87.5 percent (238/272) had suggested using condoms during the sexual act to the client. However, in the past year, only 61.4 percent of FSWs had used condoms consistently with their clients. Out of 345 respondents, almost five percent (17) of them reported that they had not used condoms at all.

Condom Use with Regular Clients

Almost 90 percent of the sex workers had clients visiting them on a regular basis. Among them, 68.4 percent (212/310) had used condoms consistently during sexual contact with them in the past year. Around 87 percent (269/310) of FSWs had also used a condom during their last sexual contact with their regular client, and, in most of these cases, the respondents (92.9 percent) had suggested using a condom

Condom Use with Non-paying regular Partners

Overall 34 percent of the sex workers had non-paying regular sex partners in the year. Their non-paying regular partners included those partners who did not pay them for sex like their boyfriends, husbands, and regular partners. Consistent use of condoms with non-paying regular partners was found to be very low. A majority of FSWs (69.2 percent) had never used condoms with their non-paying regular partners in the past year while only 10 out of 119 respondents (8.4 percent) reported that they used condoms consistently with such partners.

Condom Use with Partners Other than Clients, Husbands, and Male Friends

Condom-using practices with other occasional male partners of the FSWs who are neither their clients nor their regular sex partners: more than half of the FSWs in Pokhara (53 percent) had such relationships in the past year. Around two-thirds of them (67.8 percent) had used a condom in their last sexual act with such a partner. Almost all FSWs (91.9 percent) who had used condom in the last sex with such partners had suggested the use by themselves.

However, only 54.1 percent (99/183) of the FSWs who had sex with other sex partners in the last 12 months had consistently used condoms.

The training facilitator should give at least 10 minutes to read such statements, and inform them to discuss among themselves for 10 minutes. Facilitator should tell them to generate some idea from research perspectives, and raise some researchable questions. This might take another 10 minutes. Immediately after that raised ideas and research questions will be presented during plenary session, which will be conducted for 20 minutes.

MODULE 4

Identifying and Prioritizing Problems for HIV and AIDS Research

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Diagnose the research problems,
- (b) Discuss general problems towards HIV and AIDS in Nepal and
- (c) Describe the criteria for prioritizing the HIV and AIDS Research.

Time Frame: 90 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD projector and Screen

Teaching Methods/Process: Lecture, Brainstorming, Plenary session, Assessment/Presentation, and Discussion

Course Contents:

- a. Diagnosis of Research Problems
- b. General Problems on HIV and AIDS in Nepal
- c. Criteria for Prioritizing the HIV and AIDS Research

Group Exercise:

- Problem Situation
- Small Group Discussion

4.1 Diagnosis of Research Problems (Time: 15 minutes)

The source of research problems vary according to the experience of the person contemplating an investigation, but it is generally agreed that the process begins with an idea or need. Wherever the process starts, it will always end in a problem area.

Broadly speaking, any question that you want answer and any assumption or assertion that you want to challenge or investigate can become a research problem. However, it is important to remember that not all questions can be transformed into research problems and some may prove to be extremely difficult to study. The beginner in research, most frequently the one with no previous research experience, oftentimes confuses a problem with the problem area. Curiosity is as good a motivational factor as any.

First and foremost step in a scientific method is the identification of the problem. An investigation is not carried out simply for the sake of investigation. To initiate an investigation, there should be pre-occurred ideas that generated the necessity for the investigation to be carried out. The ideas are developed while going through literatures,

discussing with experts and continuation of activities related to the subject matter. These ideas develop into some specific topics that will be interesting or rewarding if investigated. These topics generally called problems.

Problems are identified by means of group participation. A group of knowledgeable persons are identified and their statements in negative sense are collected and grouped into different groups. Then, from each group, a statement which appears most representative of the group is selected. These statements are arranged in sequential order as they appear to the group of experts in the subject matter. These statements are called problems.

The research problem serves as the foundation of a research study: if it is well formulated, you can expect a good study to follow.

Identify the problem:

Ask Who?

- Who says that this is a problem?
- Who caused or is causing the problem?
- Whom does it or will it affect?
- Who has done something about the problem?

Ask What?

- What happened or will happen?
- What are the symptoms?
- What are the consequences to others?
- What circumstances surround the occurrence of the problem?
- What is not functioning as desired?

Ask When?

- When did it or will it happen?
- When did it first occur?

Ask Where?

- Where is the problem occurring?
- Where did it or will it have an impact?

Ask Why?

- Why is this a problem?
- Why did it or will it occur?
- Why was nothing done to prevent the problem from occurring?
- Why did no one recognize and do something about the problem sooner?
- Why is a response needed now?

Ask How?

- How should the process be working?
- How are others dealing with this or similar problems?
- How do you know this is a problem; what supporting information do you have?

Final Questions

- How will you know the problem is solved?
- What does the desired state look like?
- What data will you need to answer these questions?

Three Conditions to identify Problems

- There should be a perceived difference or discrepancy between what exists and the ideal or planned situation;
- The reason(s) for this difference should be unclear (so that it makes sense to develop research questions); and
- There should be more than one possible answer to a question or more than one solution to the problem.

Guidelines for selecting problems are:

1. The problem should be such in which the researcher may be deeply interested.
2. The problem should be allied with the chain of thinking. Stray problems if selected become difficult to coordinate and do not add to the wholesale development of the theory.
3. The problem selected should not necessarily be new one. It may be old problem or one on which work has already been done i.e., verification of old problem may equally be useful.
4. The problem should be within manageable limits i.e. it should not be too comprehensive.

Problem definition may include information on:

1. Magnitude: What is the incidence, severity and prevalence of the problem?
2. Time Frame: When does it occur? Is it current?
3. Geographic Area: Where does the problem generally occur?
4. Population: Does the problem affect certain groups of people? If so, what are their characteristics?
5. Why? What are the probable reasons for the problem? Is there agreement or conflict over these reasons? What is already known and not known?
6. Solutions: What solutions have already been tried? How successful have they been? What untried solutions might there be?
7. Unanswered Questions: What parts of the problem need further research?

4.2 General Problems on HIV and AIDS in Nepal (Time: 10 minutes)

Currently HIV prevalence for the overall population aged 15-49 years, and youth population aged 15-24 years were 0.23 (NCASC 2014) and 0.12 (NCASC 2011) percent respectively. However, HIV prevalence among high risk group such as PWIDs, MSM, Clients of Female Sex Workers (CSWs) and FSWs, were 7, 11, 3 and 2 respectively (NCASC 2013). While observing the trends of HIV prevalence among the high risk groups, it is found to be drastically declined in all the groups (PWIDs: 32.71 to 7 percent, and FSWs: 3.76 to 2 percent) except among MSM and CSWs groups, where it is increased from 1.96 to 11 and from 2.06 to 3 respectively (NCASC, 2011 and 2013). Moreover, the rate of new infections has increased among MSM/Trans Gender in Nepal. More than 80 percent HIV infections are transmitted through heterosexual transmission (NCASC, 2011).

The key affected populations at higher risk (PWIDs, MSM, FSWs, CSWs and male labor migrants) shared for 58 percent of all adult HIV infection, while the low-risk general male and female populations accounted for 42 percent of all estimated infections (NCASC, 2012). Highest infection is estimated in the age group of 25-49 years who are economically productive and sexually active. The prevalence of HIV infection among the youngest stratum of the population (<15 years) was the lowest. Most of these youngest populations were getting the HIV infection from their mother (DoHS, 2010/11). It has been noted that more than one in every five reported cases of HIV infection is among female partners of HIV positive men, and 96 percent of these are women of child bearing age.

PWIDs, MSM, and FSWs are at the centre of the epidemic, with a higher risk of acquiring HIV. Male labor migrants (particularly to India, where they likely visit FSWs) and CSWs in Nepal are playing the role of bridging populations that are transmitting infections to low-risk populations (NCASC, 2012).

How to protect general population from major risk and source of HIV infection that usually come from returning migrants or laborer from India or elsewhere is a problem. Similarly, addressing multiple underlying socio-economic and developmental factors to the spread of the HIV epidemic is another problem.

As of 2013, estimated number of adult and children with advanced HIV infection is 23,977. Out of which only 37 percent people are receiving ARV combination therapy in Nepal (NCASC, 2013). Now, the question might appear as “what about 63 percent of the people, where are they?” They might be spreading the HIV infection in the community. How to trace this sort of population, and put them into ART is a big problem. How to develop early warning indicators so that lost-to-follow-up or missing people who are HIV positive can easily be traced easily is another area of concern.

The five year trend of comprehensive knowledge of HIV and AIDS among the population aged 15-24 years has been found to be slightly increased over the eight years period, from 35.6 (NCASC, 2006) to 36.4 (CBS, 2014). Actually this indicator was supposed to be much increased. It appears that the prevention programmes focusing on knowledge enhancement of HIV and AIDS among 15-24 years population is not adequately reaching this groups.

Providing HIV prevention services for hard-to-reach populations and less visible groups is a problem, especially for the female population. The HIV prevention program is not being properly focused towards migrant population at source, transit and destination sites. Similarly, another problem might be for focusing more appropriately on prevention aspects through strategic behavior communication change for high-risk groups, including migrant workers.

It has been mentioned that greater focus should be given on condom use as an important tool for HIV and STI prevention. At the same time, female condom provision needs to be promoted so as to empower female partner in safe sex negotiation. In order to do so private sectors needs to be involved in the partnership program to lay the foundation for a long-term self-sustaining condom market in the country, which is not appropriately happening in the country.

4.3 Criteria for Prioritizing the HIV and AIDS Research (Time: 15 minutes)

At first we need to know why this needs to go for prioritization. Most of the time, we do have limited resources which need to be distributed according to the systematic prioritization.

Each problem that is proposed for research has to be judged according to certain guidelines or criteria. There may be several ideas to choose from. Before deciding on a research topic, each proposed topic must be compared with all other options.

There are basically six criteria for selecting a research topic.

Relevance: The topic you choose should generally be a priority problem. Questions to be asked include:

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

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

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

Even **within** villages, opinions may differ on how important a problem is. It is, therefore, obligatory to discuss the problem with community leaders, as well as peripheral villagers, males as well as females, rich and poor, exploring their perceptions towards the problem.

If a topic is not considered relevant, it is not worthwhile to continue rating it. In that case **drop it from the list**.

Scales of rating:

- 1 = Not Relevant
- 2 = Relevant
- 3 = Very Relevant

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

*Consider carefully whether you can find answers to the problem in already available, unpublished information or just by using your common sense. If so, **drop the topic from the list**.*

Scales of rating:

- 1 = Sufficient information already available
- 2 = Some information available but major issues not covered
- 3 = No sound information available on which to base problem-solving

Urgency of data needed (Timeliness): How urgently are the results needed for making a decision or developing interventions at various levels (from community to policy)?

Consider which research should be done first and which can be done later.

Scales of rating:

- 1 = Information not urgently needed
- 2 = Information could be used right away but a delay of some months would be acceptable
- 3 = Data very urgently needed for decision-making

Political Acceptability: In general, it is advisable to research a topic that has the interest and support of the local/national authorities. This will increase the chance that the results of the study will be implemented. Under certain circumstances, however, you may feel that a study is required to show that the government's policy needs adjustment.

If so, you should make an extra effort to involve the policy-makers concerned at an early stage, in order to limit the chances for confrontation later.

Scales of rating:

- 1 = Topic not acceptable to high level policy makers
- 2 = Topic more or less acceptable
- 3 = Topic fully acceptable

Feasibility: Look at the project you are proposing and consider the complexity of the problem and the resources you will require carrying out your study. Thought should be given first to human resource, time, equipment and money that are locally available.

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

Scales of rating:

- 1 = Study not feasible, considering available resources
- 2 = Study feasible, considering available resources
- 3 = Study very feasible, considering available resources

Applicability of possible results and recommendations: Is it likely that the recommendations from the study will be applied? This will depend not only on the management capability within the team and the blessing of the

authorities but also on the availability of resources for implementing the recommendations. Likewise, the opinion of the potential clients and of responsible staff will influence the implementation of recommendations.

Scales of rating:

- 1 = No chance of recommendations being implemented
- 2 = Some chance of recommendations being implemented
- 3 = Good chance of recommendations being implemented

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

- How acceptable is the research to those who will be studied? (Cultural sensitivity must be given careful consideration). Is the problem shared by target group and health staff/researchers?
- Can informed consent be obtained from the research participants?
- Will the condition of the research participants be taken into account? For example, if individuals are identified during the study who require treatment, will this treatment be given? What if such treatment interferes with your study results?
- Will the results be shared with those who are being studied? Will the results be helpful in improving the lives or health of those studied?

Scales of rating:

- 1 = Major ethical problems
- 2 = Minor ethical problems
- 3 = No ethical problems

4.4 Group Exercise (Time: 50 minutes)

The training facilitator should divide randomly all the participants into smaller groups consisting of five to eight people in one group. In each group, choose a chairperson and a rapporteur. Following problem situation needs to be given in the group.

There is a village in a rural mountain tourist area, composed of 300 households with the population of 1500 persons. Most of the people lived there were Tamang. About 60 percent of the people were farmers and 40 percent were working in trade business in town. In general, the villagers looked healthy. People did not consider themselves sick if they were able to work. There were two outbreaks of diarrhea in the past causing a few death. Respiratory, STI, and intestinal diseases were fairly prevalent but were rarely cause of death. Traditional healers were common means of treatment of illness among the villagers. However, a health post was somewhat 10 km away from the village.

One day a young beautiful girl was suffering with severe illness. Her parents, who were farmers after an initial period of apparent unconcern, consulted with their neighbors and were taking some traditional medicine. A week later, another young boy of a town workers family was also suffering with some sort of illness. His parents rushed him to the hospital in town. The young girl treated by the traditional healer died and the child who went to the hospital identified with HIV infection. Later on, someone said that the lady was also HIV positive and she was a sex worker by profession. Local administrative and health officers were alert by this event and arranged for free HIV testing as an emergency program. The villagers were informed to go for HIV testing on a certain date. The message from the officer was given to the VDC Chairperson who in turn asked his/her relatives to inform the villagers. On the day of HIV testing, the response was spotty and patently inconsistent. It was found that most of the young people around the houses of the young boy who was identified as HIV positive came for HIV testing, the rest were not interested.

The training facilitator should give at least 10 minutes to read such problem situation, and inform them to discuss among themselves for 10 minutes. Then facilitator should tell them to identify some specific problem from their perspectives, and raise some researchable questions. This might take another 5 minutes. Immediately after that identified problems and research questions will be presented during plenary session, which will be conducted for 20 minutes.

MODULE 5

Analysis and Statement of the Problem

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Describe the general concept for Initiating the problem analysis,
- (b) Discuss the general steps in analyzing the HIV and AIDS problem and
- (c) Justify the problem in the form of statement.

Time Frame: 90 minutes

Materials: Flip Chart, Board Markers, Computer and LCD Projector with Screen

Teaching Methods/Process: Power point presentation, Brainstorming, Plenary session and Discussion

Course Contents:

- a. General Concept for Initiating the Problem Analysis
- b. General Steps in Analyzing the HIV and AIDS Problem
- c. Formulating the Problem Statement

Group Exercise:

- Problem Analysis
- Small Group Discussion

5.1 General Concept for Initiating the Problem Analysis (Time: 5 minutes)

The researcher is often required to do research on a problem with which he or she is not very familiar. Health workers and managers or community people or beneficiary group members may be much more familiar with it. But even they may never have given critical attention to the various aspects of the problem.

A systematic analysis of the problem, completed jointly by the

- Researchers and experts as needed,
- Health workers, and
- Community people or beneficiary groups, is a very crucial step in designing the research because it:
 - Enables those concerned to pool their knowledge of the problem,
 - Clarifies the problem and the possible factors that may be contributing to it, and
 - Facilitates decisions concerning the focus and scope of the research.

5.2 General Steps in Analyzing the HIV and AIDS Problem (Time: 30 minutes)

Step 1 Clarify the viewpoints of health workers, researchers and community people or beneficiary groups or their representatives in relation to the problem

Areas of concern are often expressed in broad or vague terms by community people or beneficiary groups or their representatives.

For example,

- 'Majority of client of sex workers are reluctant to use condoms'
- 'HIV infection is a problem'

During initial discussions with health workers, researchers and community people or beneficiary group representatives who are involved in the problem area, clarify the issues by listing all the problems in the area of concern, as they perceive them.

You need to remember that a problem exists when there is a discrepancy between 'what is' and 'what should be'.

Therefore, the perceived problems should be worded in such a way as to illustrate this discrepancy.

For example, health workers may determine that the general concern that "care of HIV patients needs review" includes the following problems:

- Insufficient awareness of HIV and self-care measures among AIDS patients and their relatives,
- Insufficient peripheral facilities for long-term follow-up care,
- Excessive rate or re-admissions among AIDS,
- Inappropriate and inadequate management of complications in AIDS patients,
- Social stigma associated with HIV/AIDS,
- Negative attitudes of health staff towards PLHIV,
- Secrecy surrounding HIV/AIDS,
- High rate of AIDS complications,
- Poor compliance of patients with ARV therapy; etc.

Step 2 Further specify and describe the core problem

You should then try to identify the core problem and quantify it. Looking at the example discussed in step 1, you may decide that the core problem includes:

- The high rate of re-admissions among AIDS (a discrepancy between what is and what should be in the services)
- The high rate of AIDS complications (a discrepancy between what is and what should be in the health of the patients);

You should attempt to describe more elaborately:

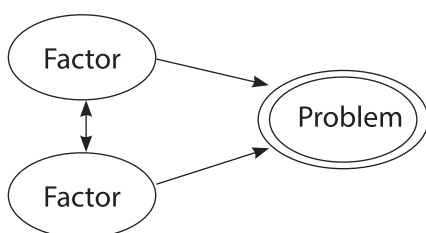
- The **nature** of the problem; the discrepancy between "what is" and what you prefer the situation to be, in terms of re-admissions and /or complications;
- The **distribution** of the problem - who is effected, when, and where; and
- The **size** and **intensity** of the problem - is it widespread, how severe is it, what are its consequences (such as disability, death, and waste or resources).

Step 3 Analyze the problem

After identifying the core problem you should:

- Identify factors that may have contributed to the problem.
- Clarify the relationship between the problem and contributing factors.

It is helpful to visualize this inter-relationship in the form of a **DIAGRAM**.



Perceived problems and factors contributing to these problems may be placed in “balloons”. The relationship between them can be indicated by arrows that can be either one-way arrows (for cause effect relationships) or two-way arrows (for mutual relationships). The core problem can be identified by drawing a double line around it.

Analysis of the problem involves several sub-steps:

Step 3.1 Write down the core problem(s) as defined in step 2 in the center of a blackboard or flip chart.

Step 3.2 Brainstorm on possible causes or factors contributing to the problem.

Step 3.3 Identify further contributing factors.

- Extend the problem analysis diagram further by identifying additional factors that could have contributed to or aggravated the problem.
- Identify several ‘generations’ of predisposing factors, by asking ‘but why’.

Step 3.4 Attempt to organize related factors together into larger categories, and develop your final draft of the diagram.

This final step in organizing the diagram will help not to overlook important factors and will make it easier to develop the data collection tools in a systematic way.

Larger categories may be of following types:

Socio-cultural factors,

- Personal factors such as a patient’s age, sex, education, underlying medical condition, exercise, diet, occupation, religion, socio-economic condition of the family, etc.
- Community determined factors such as:
 - Poor or conflicting community knowledge of signs and causes of HIV and AIDS and of requirements for ARV therapy
 - Availability of other types of treatment in the community
 - Preference for other types of treatment
 - Poor understanding/support from employer
 - Peer or superior pressure to behave in a certain way

Service factors,

- Low availability and accessibility of services (including cost of treatment)
- Poor clinic management (poor reception of patients, inadequate counseling, no ARV therapy)
- Poor support services (poor training, supervision, ARV supply)

Disease-related factors,

- Seriousness of the patient’s condition at onset of treatment
- Underlying conditions
- Diet
- Level of resistance in the community
- Physical response to the ARV treatment (complications? or quick recovery from deteriorating condition?)

5.3 Formulating the Problem Statement (Time: 15 minutes)

Research is often expensive and time consuming and most funding agencies are reluctant to support studies unless the results have direct program implications. When funds are limited (as they almost always are), it is especially important for the research investigator to justify the proposed research problem/study carefully. In writing the justification, it is usually helpful to consider the following questions and then arrange the answers to these questions into a few concise paragraphs.

1. Is the problem a current and timely one?
2. Does the problem have life-threatening or serious mortality/morbidity consequences?

3. Does the problem affect or potentially affect a large number of people?
4. Does the problem relate to on-going program activities?
5. Does the problem have broad social, economic, political or health implications?
6. Is the problem viewed as a concern by many different people?
7. Have many studies already addressed the problem?
8. Is the study of something emerging which could have significant public health impact?

A clear statement of the problem:

- Is the foundation for the further development of the research proposal (research objectives, methodology, work plan, budget, etc).
- Makes it easier to find information and reports of similar studies from which your own study design can benefit.
- Enables you to systematically point out why the proposed research on the problem should be undertaken and what you hope to achieve with the study results.

Following information should be included in the problem statement:

- A brief description of socio-economic and cultural characteristics and an overview of health status and the health-care system in the country/district in as far as these are relevant to the problem. Include a few illustrative statistics, if available, to help describe the **context** in which the problem occurs.
- A concise description of the **nature of the problem** (the discrepancy between what is and what should be) and of the size, distribution and severity of the problem (who is affected, where, since when, and what are the consequences for those affected and for the services). For a descriptive or evaluation study, the different components of the problem need to be elaborated, and the context of the disease in the chosen setting needs to be described.
- An analysis of the **major factors that may influence the problem** and a discussion of why certain factors need more investigation if the problem is to be fully understood.
- A brief description of any solutions to the problem that have been tried in the past, how well they have worked, and why further research is needed (**justification** for your study).
- A description of the type of information expected to result from the project and how this information will be used to help solve the problem.
- If necessary, a short list of definitions of crucial concepts used in the statement of the problem.

A list of abbreviations may be annexed to the proposal, but each abbreviation also has to be written out in full when introduced in the text for the first time.

5.4 Group Exercise (Time: 40 minutes)

The training facilitator should randomly divide all the participants into smaller groups consisting of five to eight people in one group. In each group, choose a chairperson and a rapporteur.

Hang up the flip charts that you used to highlight some important core problems such as

1. High defaulter rate (loss to follow up) of HIV patients in ARV therapy,
2. Poor knowledge of HIV and AIDS among wives of migrant labors,
3. Increasing trends of HIV infection among MSMs,
4. Low awareness regarding HIV/AIDS among transportation workers,
5. Stigma and discrimination faced by the PLHIV,
6. Poor satisfaction towards HIV and STI services provided by the GoN,
7. Poor knowledge of using condoms among returnee male labor migrants from India and elsewhere,
8. Appearance of HIV infected people involved in sex trade,
9. Poor quality of life of PLHIV in far-western region of Nepal, and
10. Increasing trend of HIV infection among female partners of HIV positive men.

The training facilitator should give at least 5 minutes to read such core problems, and inform them to discuss among themselves for 5 minutes. Facilitator should tell them to pick up one specific problem from their perspectives, and analyze it. This might take another 15 minutes. Immediately after that analyzed core problem will be presented during plenary session, which will be conducted for 15 minutes.

MODULE 6

Review of Available Literatures on HIV and AIDS

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Describe the reasons for reviewing available literature and other information during the preparation of a research proposal,
- (b) Describe the resources of literatures on HIV and AIDS available in Nepal and
- (c) Orient key steps in searching the literature.

Time Frame: 90 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Assessment/Presentation and Discussion

Course Contents:

- a. Rationale for Reviewing the Literatures
- b. Possible Sources of Literatures on HIV and AIDS
- c. Key Steps in Searching the Literatures

Game:

- The snake

6.1 Rationale for Reviewing the Literatures (Time: 10 minutes)

What is information?

Information is data that have been organized and communicated in a coherent and meaningful manner. Data is converted into information, and information is converted into knowledge.

Why is it important to review already available information when preparing a research proposal?

It prevents you from duplicating work that has been done before. It helps you to find out what others have learned and reported on the problem you want to study. This may assist you in refining your statement of the problem. It helps you to become more familiar with the various research approaches that might be used in your study. It should provide you with convincing arguments for why your particular research project is needed.

6.2 Possible Sources of Literatures on HIV and AIDS (Time: 10 minutes)

What are the possible sources of information?

Individuals, groups, and organizations; published information (books, articles, indexes, abstract journals); and unpublished information (other research proposals in related fields, reports, records, computer data bases)

Where can we find these different sources?

Different sources of information can be consulted and reviewed at various levels of the administrative system within our district, region and country.

At community and district level, clinic and hospital based data from routine statistics registers, opinions, beliefs of key figures (through interviews), clinical observations, reports of critical incidents, etc. local surveys, annual reports, statistics issued at provincial, and district levels, books, articles, newspapers, etc would be considered some examples of resources.

At country level, articles from national journals, books identified during literature searches at university and other national libraries, NHRC, WHO, UNICEF libraries, etc, and national documentation, reports, and raw data from the MoHP, central statistical offices, NGOs and research organizations would be considered some examples of resources. Apart from these, variety of electronic search engines (such as MEDLINE, POPLINE, Cochrane, Google scholar, Google advanced search etc.) is also considered as useful resources.

6.3 Key Steps in Searching the Literatures (Time: 50 minutes)

You need to develop a strategy to gain access to each source and to obtain information in the most productive manner. Your strategy may vary according to where you work and the topic under study. It may include the following steps:

- Identifying a key person (researcher, health worker or community member) who is knowledgeable on the topic and ask if he or she can give you a few good references or/and the names of other people whom you could contact for further information,
- Contacting librarians in universities, research institutions, NHRC, MoHP, and newspaper offices and requesting relevant references,
- Examining the bibliographies and reference lists in key papers and books to identify relevant references,
- Looking for references in indexes (e.g. Index Medicus) and abstract journals; which are available in libraries either as hard copies or in computerized form.
- Requesting a computerized literature search.
- Some agencies will assist with your literature search if requested by telephone or in writing. The request, however, should be very specific. Otherwise you will receive a long list of references, most of which may not be relevant to your topic.
- If you are requesting a computerized search, it is useful to suggest key words that can be used in locating the relevant references, and some researcher need to pay for it.
- Planning for information searching: Chalk down your possible research topics, take out the key words from title, separate those key words or combine one or more.
- *Planning a search strategy:* Define your information need (what kind of information are you looking for? who is going to use this information?), Choose your search terms (unique words, key phrases, synonyms, alternate spelling, plurals, capitals, broader topics), decide which sources to use [gateways, databases, web-sites, Journals or books, grey literature (e.g. governmental or I/NGOs publications)].
- *Key steps in information retrieving:* Once the literature will be in your hand, at first you will have to read its heading, and then summaries of the important information should be recorded either directly into your computer or write on a separate index cards. These should then be classified so that the information can easily be retrieved whenever we want. It should not be forgotten to mention the title of the literature, name of journal/ book, year of publication, author's name, volume number, page number, edition and place of publisher (if from book), etc. If you will find some relevant information in its summary part, you can read properly its objectives, methodological and result parts. This should be recorded in a similar fashion as mentioned above.
- *Summary of reading the material closer:*
 - Step 1: Read the abstract: Decide whether to read the article in detail
 - Step 2: Read introduction: It explains why the study is important. It provides review and evaluation of relevant literature

Step 3: Read Method with a close, critical eye: Focus on participants, measures, procedures

Step 4: Evaluate results: Do the conclusions seem logical? Can you detect any bias on the part of the researcher?

Step 5: Take discussion: Pay attention to limitations

- *Key steps for information reviewing:*

Organize your **index cards** or **notes** in groups of related statements according to which aspect of the problem they touch upon, e.g., community factors, service factors. Use your problem analysis diagram as a framework for writing (and adapt the diagram in turn as you find more literature). Then, you need to decide in which order you want to discuss the various issues. If you discover you have not yet found literature or information on some aspects of your problem that you suspect are important, make a special effort to find this literature. If there is no literature, this supports your justification for conducting the study.

- *Practical demonstration:* The training facilitator should show how it is being conducted. It may be useful to have the assistance of a librarian in this session.

6.4 Game: (Time: 20 minutes)

- The Snake

Objective: To energize all the participants and make them laugh

The training facilitator should ask all the participants to stand up and form a line. Everybody looks into the same direction and holds with their hands on the shoulder of the person in front of him/her. The first person is the head of the snake; the last one is the tail. Now, the head tries to catch the tail, the tail moves away in order not to be caught. It is very fast games which does not need preparation and makes everybody move and laugh.

MODULE 7

Formulation of Research Title and Objectives

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) State the importance of writing the research title including its length,
- (b) State the reasons for writing objectives,
- (c) Describe the criteria for good research objectives,
- (d) Define the characteristics of research objectives,
- (e) Describe the types of research objectives and
- (f) Create HIV and AIDS related research titles and objectives.

Time Frame: 90 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Brainstorming, Plenary session, Assessment/Presentation and Discussion

Course Contents:

- a. Importance and Length of the Title
- b. Rationale of Objective Formulation, Its Criteria and Types
- c. Examples of Research Titles and Objectives

Group Exercise:

- Group Work and Discussion

7.1 Importance and Length of the Title (Time: 5 minutes)

We need to understand that the research title will be read by many people. So, all words in the title should be chosen with great care, and their association with one another must carefully be managed. The titles should not be too short, and too long.

We need to avoid “waste” words such as “Studies on,” “Investigations on,” and “Observations on” at the start of the title. An opening A, An, or The is also a “waste” word. Certainly, such words are useless for indexing purposes.

For example:

Let us analyze a sample title:

1. “Action of antibiotics on HIV patients”
2. “Preliminary observations on the effect of certain antibiotics on HIV patients”

Facilitator should ask “Are these good titles?” It is short and carries no waste words. In both the titles, it definitely did not test the effect of all antibiotics on HIV patients. Therefore, the title is essentially meaningless.

If only one or a few antibiotics were studied, they should be individually listed in the title.

More acceptable titles are

- “Action of Streptomycin on HIV patients”
- “Action of Streptomycin, Neomycin and Tetracycline on HIV patients”

If the number of antibiotics was awkwardly large for listing in the title, perhaps a group name could have been substituted.

Although these titles are more acceptable than the sample, they are not good because they are still too general. If the “Action of” can be defined easily, the meaning might be clearer. For example, the first title above might be phrased “Inhibition of Growth of HIV by Streptomycin”.

The study title is a label and it is not a sentence. Because it is not a sentence, with the usual subject, verb, object arrangement, it is really simpler than a sentence (or, at least, usually shorter), but the order of the words becomes even more important.

Research title should provide a very brief summary, invoke interest and attract readers. The title should be long enough to cover the subject of the research, but short enough to be interesting. The title should precisely identify the area of the problem. It is always better to avoid unnecessary words such as “an analysis of”, “A comparison of”, “a study of”, “the effect of”, and “the relationship between”. The length of the title should not be more than 12 to 14 words.

7.2 Rationale of Objective Formulation. Its Criteria and Types (Time: 20 minutes)

Facilitator should ask “why should Research Objective be developed?”

The formulation of objectives will help you to focus the study (narrowing it down to essentials), avoid the collection of data/fact which are not strictly necessary for understanding and solving the problem you have identified, and organize the study in clearly defined parts or phases.

In fact, research objectives summarize what is to be achieved by the study, describe what will be demonstrated, tested or evaluated, confirmed or compared and overview the expected solution of the problem and should be closely be related to the problem.

Facilitator should ask “why research objectives are important?”

Research Objectives give an indication of relevant variables to be considered in the study, guide the researcher in the choice of research design or methods, tell the researcher what data to collect, and helpful in planning the analysis of the results.

Facilitator should ask “what are the criteria for good research objectives?”

Research objective should closely be related to the statement of the problem, able to cover the different aspect of the problems and its contributing factors in a coherent way and in a logical sequence. It clearly phrased in operational terms specifying exactly.

- What you plan to do?
- Where?
- To whom it will be done?
- When it will be done?
- For what purpose?

Research objective should be realistic and measurable. It should be action oriented and have action verbs which can be evaluated (e.g. to determine/identify/calculate/ describe/establish/validate/compare/develop/investigate/verify/assess/find out etc.). We should avoid the use of vague non-action verbs (to appreciate, understand, study, learn etc).

We should keep in mind that the results will be compared to the objectives when the research project is evaluated. The research project cannot be evaluated if the objectives have not been spelled out clearly.

Facilitator should ask “what are the general characteristics of research objectives?”

Generally it has been specified that the research objectives should have five general characteristics namely Specific, Measurable, Achievable/Attainable, Relevant and Timely/Time-bound (SMART).

Under each five characteristics, it is essential to ask following key questions

- **Specific**
 - Is the objective clear and well defined?
 - Who is the target population?
 - What will be accomplished?
 - Who is doing what to whom?
- **Measurable**
 - Does the objective include a quality or quantity reference point so you know when it has been achieved?
 - How much change is expected?
- **Achievable/Attainable**
 - Is there a realistic path to achievement?
 - Is it within the availability of resources (financial, knowledge, etc.)?
- **Relevant**
 - Does it address the scope of the problem?
- **Timely/Time-bound**
 - Is there enough time to achieve the objective?
 - By when do you want to achieve the objective?

The training facilitator should ask “what are the types of research objective?”

There are basically two types of research objective, namely general and specific.

The **general objective** of a study states what researchers expect to achieve by the study in general terms. It is stated in one or two sentences outlining the broad perspective of the study in general terms. This considered as the overall purpose of the research. It should be derived from the statement of the broad problem.

It is possible (and advisable) to break down a general objective into smaller, logically connected parts. These are normally referred to as **specific objectives**. These should systematically address the various aspects of the problem as defined under ‘Statement of the Problem’ and the key factors that are assumed to influence or cause the problem. They should specify **what** you will do in your study, **where** and **for what purpose**. The first specific objective usually focuses on quantifying or specifying the problem.

7.3 Examples of Research Titles and Objectives (Time: 5 minutes)

If the problem identified is high defaulter rate of AIDS patients in Pokhara district in the year 2011 and 2012. What would be the research title, general objective and specific objectives of the study?

Research Title

High defaulter rate of HIV patients in ARV therapy in Pokhara district

General Objective

To identify the factors/reasons for high defaulter rate of HIV patients in ARV therapy in Pokhara district from 2011-2012

Specific Objectives

- To identify socio-cultural and economic factors that may influence the defaulter rate of HIV patients,
- To identify the factors related to ARV therapy and related services offered, and
- To identify the disease related factors

Some more objectives

- To identify challenges encountered when trying to integrate family planning into prevention of mother-to-child transmission services within primary health care facilities in Nepal.
- To estimate the contraceptive prevalence rate among women accessing immunization services in primary health care facilities between 9 and 12 months postpartum, disaggregated by HIV status.

7.4 Group Exercise (Time: 60 minutes)

The training facilitator should randomly divide all the participants into smaller groups consisting of five to eight people in one group. In each group choose a Chairperson and a rapporteur.

Hang up the flip charts that you used to present your statement of the problem so they are visible to all group members. Incorporate useful suggestions for changes that were made when you presented them in plenary. Then, use analysis diagram as a starting point for formulating objectives, focusing, for example, on:

- Further quantifying and specifying the problem, if required.
- Exploring the key factors or major groups of factors that, in your opinion, might influence or cause the problem; and
- Any other major research activities you propose.

Prepare a general objective and specific objectives for the research proposal you are developing.

After formulating your objectives ask yourself the following questions:

- Do the objectives deal with all aspects of the research problem in a logical and coherent way?
- Are the objectives clearly phrased?
- Are the objectives defined in operational terms that can be measured? Realistic?
- Do they indicate where the study will be conducted?
- Do they include the development of recommendations for how the research results will be used to solve the problem?

Prepare a flip chart with your objectives for use in the Exercise and in the plenary discussion. Add on the title of your study and revise it, if necessary, to match the objectives.

Assess the research objectives formulated by another team using the criteria mentioned above. Compare them with group's statement of the problem and the title of the study.

The training facilitator should give at least 25 minutes for group work and inform them to discuss among themselves for 10 minutes. Facilitator should tell them to develop general objective and specific objectives. This might take another 10 minutes. Immediately after that research objectives along with its title will be presented during plenary session, which will be conducted for 15 minutes.

MODULE 8

Introduction to Methodology for conducting Research on HIV and AIDS

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Describe the meaning of research methods and methodology,
- (b) Distinguish between qualitative and quantitative methods and
- (c) Demonstrate the relationship between research questions/objectives with study types and methods.

Time Frame: 90 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Brainstorming, Plenary session, Assessment/Presentation and Discussion

Course Contents

- a. Basic Concepts on Research Methods and Methodology
- b. General Introduction to Qualitative and Quantitative Methods and its use in HIV and AIDS research
- c. How Research Questions and Objectives Guide Study Types and Methods

Group Exercise:

- Group Work and Discussion

8.1 Basic Concepts on Research Methods and Methodology (Time: 10 minutes)

The training facilitator should ask “what is the difference between research methods and research methodology?”

Research Methods and Research Methodology are two terms that are often confused as one and the same. One of the primary differences between them is that research methods are the methods by which you conduct research into a subject or a topic. On the other hand, research methodology explains the methods by which you may proceed with your research. Research methods, therefore, are the means, the instruments or the tools a particular investigator chooses to accumulate the data required to answer his/her research question. We all have used at least one or more of these tools for our research projects. These, for examples, include questionnaires, interviews, medical records or audiovisual materials. On the other hand, research methodology, in simpler terms is the manner or the approach the investigator adopts in answering his/her research question. Methodology, therefore, in simpler terms is the strategy or the approach adopted by the researcher or investigator.

In short, it can be said that research methods aim at finding solutions to research problems. On the other hand, research methodology aims at the employment of the correct procedures to find out solutions. It is, thus, interesting to note that research methodology paves the way for research methods to be conducted properly.

8.2 General Introduction to Qualitative and Quantitative Methods and its Use in HIV and AIDS research (Time: 20 minutes)

Facilitator should ask “what is the difference between qualitative and quantitative methods?”

The term **qualitative** research is an umbrella term referring to several research traditions and strategies that share certain commonalities. There is an emphasis on process, or how things happen, and a focus on attitudes, beliefs, and thoughts — how people make sense of their experiences as they interpret their word.

Quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world. This research method is used to describe variables, to examine relationships among variables, and to determine cause-and-effect interactions between variables. It can also be used to evaluate safety and effectiveness of an intervention.

The **quantitative** paradigm uses analytical designs and statistical techniques to collect numerical data on a representative population sample. The **qualitative** paradigm applies anthropological and sociological research methods to understand relevant social phenomena. Data are in the form of words and phrases, and samples tend to be small and non random.

The focus of **quantitative** research is on quantity (how much, how many). The goal of a quantitative investigation is hypothesis testing, prediction, or confirmation. Research is focused on outcomes, and the reliability, safety and effectiveness of measures (e.g. scales, tests, surveys, or questionnaires) is stressed. The focus of **qualitative** research is on quality (the nature of something: its essence). The goal of qualitative research is hypothesis generation, understanding, or discovery. Research is focused on eliciting an “insider’s” view of the group under study, and the researcher is the primary instrument for data collection and analysis. The primary role of the researcher is to be responsive to the context, or situation, to observe, and to ask open-ended questions to determine how people make sense of their lives.

Design characteristics of **quantitative** studies are predetermined and structured. In contrast, **qualitative** study design characteristics are flexible, evolving, and emergent. Procedures and methods often change with the situation.

Quantitative researchers use methods that provide factual, reliable data at the end of the research study that are usually generalizable to a larger group (population). **Qualitative** methods generate richly details data about the group being studies and provide contextual understanding. Results are not generalized to a reference population, although findings can often be applied as an explanation for the behavior of other groups.

In reality, whether one uses the methods of the qualitative or quantitative paradigm depends on the nature of the research question; in general, questions that ask “who”, “what is”, “when”, and “where” are likely to be answered by using quantitative techniques. Questions that ask “how”, “what”, and “why” may be more suited to qualitative methods. The research tools of each method are superior to the other under different circumstances. Some studies have several research questions and employ both quantitative and qualitative methods.

Why is the qualitative approach particularly appropriate in the context of HIV/AIDS?

HIV is a sensitive issue. Fear of stigmatization or shame may block all communication. However, the qualitative approach is especially suited to delicate issues, it is responsive to the complexity of situations and human behavior, it is attentive to different modes of communication (spoken language, body language, written records, etc).

Qualitative research is concerned with the ‘why’ and the ‘how’, and seeks to grasp what is actually happening rather than just regulations and norms: It studies knowledge and insights regarding HIV and AIDS. It makes it possible to identify the needs and anxieties of the persons involved and unlock the real experience of others. It distinguishes between what people say they have to do (the rules), what they say they do (the norms), and what

they actually do (reality). It takes account of the constant interaction between points of view and processes, and accepts contradictions. The qualitative approach provides for the study of persons and essential elements as a single whole and not as variables. The aim of understanding lies at the heart of the qualitative approach with a far greater emphasis on processes and the significance of attitudes, points of view and actions than on their frequency.

Typical questions that may very well be addressed in a qualitative approach to research are “Why do truck drivers, although well informed, continue to have high risk sexual behavior patterns?”

Qualitative research is intended to give meaning to phenomena studied in their context, which may, for example, differ in an urban as opposed to a rural environment, or depending on whether socio-cultural groups are more or less responsive with regard to matters relating to sexuality.

It is especially recommended for analyzing AIDS-related social representation, whose crucial significance in processes involving the stigmatization of PLHIV and their status in the society and family is fully acknowledged (on HIV/AIDS-related stigma and discrimination).

Qualitative research offers a better grasp of the changing social experiences of different groups and of attitudes vis-à-vis sero-positivity and the illness.

The techniques used in qualitative research, would be personal testimony, interviews (with key informants including people affected, social leaders, formal and informal and service providers), group discussions, observations and personal experiences. Thus, information obtained from PLHIV and members of the community will be of assistance in providing contextual data that can help to answer the questions addressed by research, which are important in establishing a program for preventive education, such as “What are the attitudes of parents and communities vis-à-vis teachers living with HIV, and how open are they in discussing HIV-related sexual issues with young people?”

8.3 How Research Questions and Objectives Guide Study Types and Methods? (Time: 10 minutes)

The way we would like to put our questions and objectives will guide us towards its study types and methods of data collection. As it was expressed into our previous modules, we developed following research questions and their study types.

| Levels of Research Questions | | Study Types |
|------------------------------|--|----------------------|
| Level I | What are the characteristics of HIV and AIDS patients? | Descriptive Study |
| | What is the situation of HIV infection in general population? | |
| | What are the factors responsible to cause HIV? | |
| Level II | Are certain factors associated with the HIV infection among females of far-western region? | Analytical Study |
| | Is there gender difference in having HIV infection? | |
| | What is the relationship between condom use and HIV infection among male patients? | |
| Level III | Is patient satisfaction increase with positive attitudes toward self-care? | Interventional Study |
| | Which of two drugs give better results in increasing CD4 counts among AIDS patients? | |
| | What is the effect of a particular strategy/intervention in lowering HIV infection among Key Affected Populations? | |

Into our previous modules, we have assumed that there is a high defaulter rate of HIV patients in ARV therapy in Pokhara district from 2011-2012. For which, we have developed our general and specific objectives. Based on each specific objective, we need to define our corresponding methods.

| Specific Objectives | Methods | Tools/Techniques |
|---|--------------------------------------|--------------------------------------|
| To identify socio-cultural and economic factors that may influence the defaulter rate of HIV patients | Quantitative Method | Questionnaire |
| To identify the factors related to ARV therapy and related services offered | Quantitative and Qualitative Methods | Questionnaire and Observation |
| To identify the disease related factors | Quantitative and Qualitative Methods | Questionnaire and In-depth Interview |

In the above said objective matrix, we need to link our research questions. If most of our research questions are gearing towards how the ARV therapy and related services have been offered, and at what extent disease related factors might contribute the situation of high defaulter rate of HIV patients, we need to adopt qualitative method.

8.4 Group Exercise (Time: 50 minutes)

The Training facilitator should randomly divide all the participants into smaller groups consisting of five to eight people in one group. In each group choose a Chairperson and a rapporteur.

Hang up the flip charts that you used to present your core research problems so they are visible to all group members.

Core problem may be given as

- Low coverage of HIV prevention services among labor migrants and their spouses.
- Low coverage of HIV testing and counseling among Key Affected Populations at higher risk of HIV in Nepal
- Low efficacy of correct and consistent condom use to reduce new HIV infections among Key Affected Populations at higher risk of HIV in Nepal

Based on above said core problems, prepare research questions, general objective and specific objectives. Based on each research questions and specific objectives, tell participants to write study type and its methods respectively.

Prepare a flip chart with your objective matrix for use in the exercise and in the plenary discussion. Discuss the study types and methods formulated by another team.

The training facilitator should inform them to discuss among themselves for 10 minutes. Facilitator should tell them to develop research questions, general objective and specific objectives along with its study types and methods with keeping view on the given core research problem. This might take another 20 minutes. Immediately after that research questions and objectives along with its study types and methods will be presented during plenary session, which will be conducted for 20 minutes.

MODULE 9

Identification of Variables and Scales of Measurements

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Define variables and describe its importance in research,
- (b) Describe various type of variables and
- (c) Define the types of scales of measurement.

Time Frame: 90 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipment with LCD Projector and Screen

Teaching Methods/Process: Lecture, Brainstorming, Plenary session, Assessment/Presentation and Discussion

Course Contents

- a. Meaning of Variables and its Rationale
- b. Types of Variables
- c. Scales of Measurements

Group Exercise:

- Group Work and Discussion

9.1 Meaning of Variables and its Rationale (Time: 10 minutes)

The training facilitator should ask all the participants

Why variable needs to be taken into Consideration?

- Variable consideration is important for presenting and analyzing the data in convenient way,
- Identification of variables helps in the presentation of data,
- Achieving the objective of research and
- Testing hypotheses (if relevant)

The training facilitator should ask the participants what could be the probable factors responsible for the problem “high defaulter rate of HIV patients in ART in Pokhara district”?

Probable factors could be as

- (1) Inadequate Counseling,
- (2) Irregular Availability of ARV Therapy,
- (3) Long Home Hospital/Clinic Distance,
- (4) Long Waiting Time,
- (5) Rural Patients Preference for Alternate Treatment,
- (6) Breaking of Confidentiality,
- (7) Poor Knowledge of the Signs, Causes and Consequences of HIV.

After probable factors identification, we need to know the concept of variables. Variable is an empirical property that can vary in value or kind. It is a characteristic of a person or thing that can be classified or measured and have more than one value or kind. *Example:* Sex (male, female), Infection status (present, absent), Classified (kind), Heart Rate, Height, Weight, Blood pressure measured (valued)

9.2 Types of Variables (Time: 20 minutes)

There are two kinds of variables namely qualitative and quantitative variables.

Qualitative variables are measured in non-numeric terms, and classified by some characteristics.

Examples of **qualitative** variables:

- Sex: Male, Female
- Education status: Illiterate, Literate
- Living: Mountain, Hill, *Tarai* or Rural, Urban
- Clinical Diagnosis: Suspected, Confirmed
- Status of HIV Infection: Positive, Negative
- Types of HIV: HIV type 1 (HIV-1) and HIV type 2 (HIV-2)
- Survival Period: Less than one year, one to two years, three years, four years, more than five years
- Types of Therapy: Therapy A, Therapy B, Therapy C

Since the values of these variables are expressed in categories, we call them *categorical variables*. Categorical variables are of two types:

Nominal Variable: It is considered by name, referred as nominal variable.

For examples:

Status of HIV Infection: Positive, Negative

Types of Therapy: Therapy A, Therapy B, Therapy C

Survival Period: Less than one year, one to two years, three years, four years, more than five years

Ordinal Variable: It is expressed in order, referred as ordinal variable.

For examples:

Socio-economic condition of the PLHIV: Income: Low, Medium, High

Seriousness of HIV: Severe, Moderate, Mild

Quantitative variables are measured in numeric terms and expressed numerically.

Examples of **quantitative** variables:

- Age: years
- Weight: Kg
- Height: cm
- Body Temperature: Celsius
- Hemoglobin: gm/dl
- Blood Pressure: mm of Hg (Systolic), mm of Hg (Diastolic)
- Bleeding Time/Clotting Time: min
- WBC / RBC count:/mm³
- Glucose level (fasting/non fasting): mg/dl
- Cholesterol Total/Triglyceride/Urea/Creatinine: mg/dl
- CD4 count:

Because the values of all these variables are expressed in numbers, we call them numerical variables. Numerical variables are of two types:

Discrete Variable: It is usually thought of as being a whole unit, one that cannot be fractionated or divided up into smaller parts.

For examples:

WBC count:/mm³

CD4 count:

Number of microorganisms:

Continuous Variable: It can be divided into fractional amounts in large or small degrees.

For examples:

Blood Pressure: mm of Hg (Systolic), mm of Hg (Diastolic)

Hemoglobin: gm/dl

Glucose level (fasting/non fasting): mg/dl

Dependent and Independent Variables: These variables can be qualitative and quantitative. We must mention these variables in analytical study (research hypothesis testing study). However, one can identify these variables in a simple descriptive study to generate the hypothesis.

Dependent variable is the one that is expected to change as a result of the treatment or intervention, while independent variable is expected to cause some effect on the dependent variable. So, dependent variable depends on independent variable.

For example: Independent variable: Types of Therapy: Therapy A, Therapy B, Therapy C

Dependant variable: Survival Period: Less than one year, one to two years, three years, four years, more than five years

Background Variables: In almost every study, background variables, such as age, sex, educational level, socioeconomic status, marital status, and religion are mentioned. These background variables are often related to a number of independent variables, so that they influence the problem directly and indirectly. If the background variables are important to the study, they should be measured. However, researchers try to keep the number of background variables measured as few as possible.

9.3 Scales of Measurements (Time: 20 minutes)

Scales define the type categories we use in measurement and the selection of a scale has direct impact on our ability to describe relationships between variables. It measures the intensity or pattern of a responses. It is common in situations where a researcher wants to measure how an individual feels or thinks about something. It produces quantitative measures.

In another way, when we “measure” something, we are actually using a function that maps a property of the item being studied to a real number. Scales of measurement refer to ways in which variables/numbers are defined and categorized. Each scale of measurement has certain property which in turn determines the appropriateness for the use of certain statistical analyses.

Basic Hints

Numbers can be used in a variety of ways:

Identification (as labels): Example: Address

Magnitude (to indicate 'more or less' than): Example: Relative cost of drug and vaccines

Equal intervals (to indicate exact relationships): Example: 500-300 = 900-700

Absolute zero (0 has an absolute meaning): Example: Money – Rs. 0 means no money

Each of these specifies a different scale of measurement.

We generally consider four kinds of scales.

Nominal Scale is used when the measurements are expressed in name only; that is the data tells only what category to which a unit belongs. No ordering of the cases is implied. Simply represents qualitative difference in the variable measured. It can only tell us that a difference exists without the possibility telling the direction or magnitude of the difference. For example, ethnicity, sex, occupation, and religion.

Ordinal Scale is used when the measurements are expressed in orders; that is the data tells when one unit has more of the property being measured than does another unit. It is similar to the nominal scale in that the measurement tells to which category the unit belongs, but there is also an underlying ordering principle (ordered sequence). In this case, attributes that can be rank-ordered and can tell us the direction of the difference but not the magnitude. Distances between attributes do not have any meaning. In another word, the interval between values is not interpretable in an ordinal measure. For example, socio-economic class, conditions of health, and severity of diseases.

Interval Scale is used when the measurements are expressed in the categories where distance has a meaning; that is the data tells us that one unit differs by a certain amount of the property being measured from another unit. Categories on an interval scale are organized sequentially, and all categories are the same size. We can determine the direction and the magnitude of a difference. It may have an arbitrary zero (convenient point of reference) i.e. the distance between attributes does have meaning. For example, Measuring temperature (in Fahrenheit), the distance from 30-40 is same as distance from 70-80. The interval between values is interpretable. Because of this, it makes sense to compute an average of an interval variable, where it doesn't make sense to do so for ordinal scales. But it should be noted that ratios don't make any sense — 80 degrees is not twice as hot as 40 degrees (although the attribute value is twice as large) in interval measurement.

Ratio Scale is used when the measurements are expressed in numerical terms where zero has a meaning; that is the data tells us that one unit has so many times as much of the property being measured as does another unit. It consists of equal, ordered categories anchored by a zero point that is not arbitrary but meaningful (representing absence of a variable), and allows us to determine the direction, the magnitude, and the ratio of the difference. It always has an absolute zero that is meaningful. This means that you can construct a meaningful fraction (or Ratio) with a ratio variable. For example, weight, WBC count, number of clients in past six months – where you can have zero clients.

Scale of Measurement and Framework for Defining Variables:

| Conceptual Definition of Variable | Operational definition i.e. indicator | Scale of Measurement |
|-----------------------------------|---------------------------------------|----------------------|
| Age | Age at last birthday | Continuous in months |
| Family Size | Number of family members | Discrete |
| Use of Clinic | Number of visits to clinic | Discrete |

| | | |
|---|---|--|
| Hemoglobin | Haemoglobin concentration in capillary blood, measured by haemoglobinometer | Continuous: e.g., grams per 100ml., rounded off to nearest gram |
| Nutritional Status | Weight in relation to age compared to a standard growth curve | Ordinal: e.g., Well nourished = >80% of standard Moderately malnourished = 60% to 80% of standard Severely malnourished = <60% of standards |
| Patient's Satisfaction | Response to a specific question about her/his satisfaction with services obtained, put to patients on discharge | Ordinal: e.g., Very satisfied Somewhat satisfied Somewhat dissatisfied Very dissatisfied |
| ART Coverage | Percentage of PLHIV taken ART in a particular area | Continuous: e.g., percentages: or Ordinal, e.g., High > 80% Medium 60% -80% Low < 60% |
| Religion | As reported by informants | Nominal: Hindu, Buddhist, Christian, Islam (Muslims), etc. |
| Main Source of Carbohydrate in the Diet | Main type of staple food eaten | Nominal: e.g., Rice, Maize, Wheat, etc. |

9.4 Group Exercise (Time: 40 minutes)

The training facilitator should divide randomly all the participants into smaller groups consisting of five to eight people in one group. In each group choose a Chairperson and a rapporteur.

Hang up the flip charts that you used to present your factors based on the core problem, so they are visible to all group members.

Core problem: High defaulter rate of HIV patients in ART in Pokhara district

Suppose factors could be as

- (1) Inadequate Counseling,
- (2) Irregular Availability of ART,
- (3) Long Home Hospital/Clinic Distance,
- (4) Long Waiting Time,
- (5) Rural Patients Preference for Alternate Treatment,
- (6) Breaking of Confidentiality,
- (7) Poor Knowledge of the Signs, Causes and Consequences of HIV.

Based on above said factors, participants need to prepare variables, and identify specific qualitative and quantitative variables. Based on each variable, participants need to write their scales of measurement.

Prepare a flip chart with your framework of defining variables for use in the exercise and in the plenary discussion. Discuss the study types and methods formulated by another team.

The training facilitator should inform them to discuss among themselves for 10 minutes. Facilitator should tell them to develop variables along with its scale of measurements with keeping view on the given factors. This might take another 15 minutes. Immediately after that variables along with its scale of measurements that includes framework of defining variables will be presented during plenary session, which will be conducted for 15 minutes.

MODULE 10

Study Types (Includes only basic study types for HIV and AIDS research)

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Describe Exploratory Study / Qualitative Study / Case Study,
- (b) Describe Cross-sectional Descriptive Study / Prevalence Study,
- (c) Describe Longitudinal Study / Incidence Study and
- (d) Describe Integrated Biological and Behavioral Surveillance (IBBS) Surveys.

Time Frame: 4 hours 30 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projectors and Screen

Teaching Methods/Process: Lecture, Brainstorming, Plenary Session, Assessment/Presentation and Discussion

Course Contents

- a. Exploratory Study / Qualitative Study
- b. Cross-sectional Descriptive Study / Prevalence Study
- c. Longitudinal Study / Incidence Study
- d. Integrated Biological and Behavioral Surveillance (IBBS) Surveys

Game

- The Major Says
- The Rainstorm

Class Exercise

- Class Work and Discussion

10.1 Exploratory Study / Qualitative Study / Case Study (Time: 60 minutes)

It is a small-scale study of relatively short duration, which is carried out when little is known about a situation or a problem. It may include description as well as comparison.

When the purpose of research is to gain familiarity with a phenomenon or acquire new insight into it in order to formulate a more precise problem or develop hypothesis, the exploratory studies come in handy. If the theory happens to be too general or too specific, a hypothesis cannot to be formulated. Therefore a need for an exploratory research is felt to gain experience that will be helpful in formulating relevant hypothesis for more definite investigation.

The results of exploratory research are not usually useful for decision-making by themselves, but they can provide significant insight into a given situation. Although the results of qualitative research can give some indication as to the “why”, “how” and “when” something occurs, it cannot tell us “how often” or “how many”.

Exploratory research is not typically generalizable to the population at large.

For most purposes, exploratory research produces qualitative data. Generally, exploratory research techniques simply involve conversations between a researcher and the people being studied. Although the researcher may guide the conversation across certain issues, the questioning is usually informal and semi structured. Thus, the data produced by qualitative research is textual. That is, the research produces a “text.” Although the text is analyzed, the methods of analyses are not statistical; textual data are not numerical and do not lend themselves to statistical analysis. This limitation is important. Researchers and decision makers alike often wish to generalize the conclusions of their research from their samples to some larger population of interest. Textual data do not permit this kind of generalization. On the other hand, assuming other conditions are met, quantitative data may be generalized from a sample to a larger population.

Some **qualitative** studies where data are collected through observation or interviews are exploratory in nature. When the data reveal some pattern regarding the phenomena of interest theories are developed and hypothesis formulated for subsequent testing. Exploratory studies are also necessary when some facts are known but more information is needed for developing a viable theoretical framework.

The exploratory researcher needs to be creative, adopt an investigative position, have an open mind, be very flexible, and explore all sources of information. Creative questions must be asked, and a researcher should take an advantage of coincidence – unexpected or chance factors that have larger implications.

Goals of Exploratory Study

- Become familiar with the basic facts, people, and concerns involved,
- Develop a well-grounded mental picture of what is occurring,
- Generate many ideas,
- Determine the feasibility of doing additional research,
- Formulate questions and refine issues for more systematic enquiry, and
- Develop techniques and a sense of direction for future research.

Characteristics of Qualitative Research

- Mostly descriptive in nature where numbers are not used to collect data, but rather words and pictures form the basic methods of data collection,
- Quotations are very often used in collecting qualitative data,
- Researchers are concerned with the natural history of the situation being studied,
- Qualitative studies tend to study what goes on in an institution so that the expected outcomes are fulfilled,
- Develop understanding,
- Observation,
- Open ended Interview, Etc.

For example: Research on AIDS illustrates exploratory research. When AIDS first appeared, in around 1980, no one knew what type of disease it was, or even if it was a disease. No one knew what caused it, how it was spread, or why it had suddenly appeared. All that was known was that people entered hospitals with symptoms that had never been seen before, failed to respond to any treatment, and died quickly. It took many exploratory studies before enough was known to design precise studies about the disease.

Exploratory study might be relevant in the following conditions: A national AIDS control program wishes to establish counseling services for PLHIV and AIDS patients, but lacks information on specific needs for support. To explore these needs, a number of in-depth interviews are held with various categories of patients (males, females, married, single) and with some counselors working on a program that is already under way.

When doing exploratory studies, we describe the needs of various categories of patients and the possibilities for action. We may want to go further and try to explain the differences we observe (e.g., in the needs of male and female AIDS patients) or to identify causes of problems. Then we will need to compare groups.

Health center A is functioning well compared to health center B in terms of providing its OPD services. So, it is necessary to detect the possible reasons for bottlenecks in the functioning of its OPD services.

Facilitator should ask “what is case study?”

A case study is a story about something unique, special or interesting—stories can be about individuals, organizations, processes, programs, neighborhoods, institutions, village, and even events. It describes in-depth the characteristics of one or a limited number of ‘cases’. Such a study can provide quite useful insight into a problem. The case study gives the story behind the result by capturing what happened to bring it about, and can be a good opportunity to highlight a project’s success, or to bring attention to a particular challenge or difficulty in a project. Cases might be selected because they are highly effective, not effective, representative, typical, or of special interest. For example, in clinical medicine the characteristics of a hitherto unrecognized illness may be documented as a case study. This is often the first step toward building up a clinical picture of that illness. A few examples of case study topics are provided, which describe what happened when, to whom, and with what consequences in each case.

| Case Study Examples | Uniqueness/Point of Interest |
|---|---|
| Shifting attitudes youth-serving service providers | Your program was able to change service providers’ attitudes towards dealing with adolescent sexual and reproductive health needs in an environment where provider’s attitudes have been a barrier to young people accessing sexual and reproductive health services. |
| Integrating HIV prevention in community-based organization (CBO) health services delivery | Your program was able to integrate HIV prevention in several CBO service delivery points in an environment that normally does not include or welcome HIV prevention activities. |

Facilitator should ask “when is a case study appropriate?”

Case studies are appropriate when there is a unique or interesting story to be told. Case studies are often used to provide context to other data (such as outcome data), offering a more complete picture of what happened in the program and why.

Facilitator should ask “what are the advantages and limitations of a case study?”

The primary advantage of a case study is that it provides much more detailed information than what is available through other methods, such as surveys. Case studies also allow one to present data collected from multiple methods (i.e., surveys, interviews, document review, and observation) to provide the complete story. There are a few limitations and pitfalls however, each of which is described below.

Can be lengthy: Because they provide detailed information about the case in narrative form, it may be difficult to hold a reader’s interest if too lengthy. In writing the case in study, care should be taken to provide the rich information in a digestible manner.

Concern that case studies lack rigor: Case studies have been viewed in the evaluation and research fields as less rigorous than surveys or other methods. Reasons for this include the fact that qualitative research in general is still

considered unscientific by some and in many cases, case study researchers have not been systematic in their data collection or have allowed bias in their findings. In conducting and writing case studies, all involved should use care in being systematic in their data collection and take steps to ensure validity and reliability in the study.

Not generalizable: A common complaint about case studies is that it is difficult to generalize from one case to another. But case studies have also been prone to over generalization, which comes from selecting a few examples and assuming without evidence that they are typical or representative of the population.

Note: *If one wishes to test whether the findings pertain to a larger population, a more extensive, cross-sectional survey has to be designed.*

10.2 Game (Time: 30 minutes)

- The Major Says

Objective: Reactivation

The training facilitator needs to tell all the participants to stand in circle. If S/he says; “Do this”, you do it, if S/he says; “Do that”, you don’t do it. Then the facilitator does some gymnastic exercises like bending knees, waving arms, turning head and comments with “this”, where everybody is supposed to do the same, or S/he says “that” where everybody is supposed not to be it. Somebody is always out of step, which ends up in great laughter.

10.3 Cross-sectional Descriptive Study / Prevalence Study (Time: 45 minutes)

It is a snapshot of the health experience of a defined single population at particular one point in time. In another words, it focuses to describe and quantify the distribution of certain variables in one particular population group (e.g. ethnic group or one religion group or area) at one point of time. They may cover, for example:

Physical characteristics of people, materials or the environment, as in — prevalence surveys of HIV, or evaluation of coverage (of ART, HIV vaccines, etc.), *Socio-economic characteristics* of people such as their age, education, marital status, number of children and income, The *behavior* or practices of people and the *knowledge, attitudes, beliefs, opinions* which may help to explain that behavior (studies), or events that occurred in the population.

Cross-sectional surveys cover a selected sample of the population. If a cross-sectional study covers the total population, it is called a census. A cross-sectional survey may be repeated in order to measure changes over time in the characteristics that were studied. The surveys may be very large, with hundreds or even thousands of study units. In these cases, only a limited number of variables will usually be included, in order to avoid problems with analysis and report writing. If cross-sectional surveys are smaller, they can be more complex. Small surveys can reveal interesting associations between certain variables, such as between ‘having HIV’ and ‘socio-economic status’, ‘sex’, and ‘ways of coping’. It simultaneously determines the variety of exposures and disease status at a single point in time (a cross-section of the population). Researchers often go further and will combine a *description* of the study population with a *comparison* of a number of groups within that population.

Therefore, it can be said that it examines the relationship between health outcomes and various exposures including other variables in a representative sample of a defined population (single or two or more) at a specific point in time. This way it may examine the association between an exposure and an outcome, but it is often hard to determine whether the exposure preceded the outcome or vice versa. This may be used to examine potential risk factors (e.g., how many of those who receive HIV vaccination differ from those who do not). In general, cross-sectional descriptive surveys measure the situation at a given moment – prevalence – rather than the occurrence of new events – incidence.

Note: *There is no specific research hypothesis while conducting cross-sectional descriptive study, but we may have such hypothesis back in head for cross-tabulation, which is for hypothesis generation.*

Facilitator should ask “what is prevalence study?”

Before explaining about prevalence study, it is better to describe “rate”, “ratio”, “proportion”, “numerator”, “denominator - mid-year population or population at risk” at first. For the public health practitioner interested in determining who is at risk and monitoring the success of prevention efforts, the most useful measure is a rate. **Rates** measure the relative frequency of cases in a population during a specified period of time.

Ratio expresses a relation in size between two random quantities. It is the result of dividing quantity by another. $x:y$ or x/y , ratio of WBCs relative to RBCs is 1:600 or $1/600$, meaning that for each WBC, there are 600 RBCs.

The number of children with HIV at a certain time

The number of children with malnutrition at a certain time

For example, Sex ratio, doctor population ratio, risk ratio, rate ratio, maternal mortality ratio, etc.

Proportion is a ratio which indicates the relation in magnitude of part of the whole. It is usually expressed as a percentage.

Number of children infected with HIV at a certain time **x** 100
Total number of children in the village at the same time

Numerator refers to the number of times an event (e.g. sickness, birth, death, episodes of sickness) has occurred in a population during a specified time-period. The numerator is a component of the denominator in calculating a rate, but not in ratio.

The researcher has to choose an appropriate **denominator** while calculating a rate. It may be related to the population or the total events.

Mid-year population: Because the population size changes daily due to births, deaths and migration, the mid-year population is commonly chosen as a denominator. The mid-point refers to the population estimated as on the first of July of a year.

Population at risk: Because it focuses on groups of risk of disease rather than an individuals. It is applied to all those to whom an event could have happened whether it did not. For example, if we are determining the rate of accidents for a town, the population at risk is all the people in the town. But sometime, it may be necessary to exclude people because they are not at risk, as for example, in food poisoning, only those who ate the food are at the risk of becoming ill. In calculating, “general fertility rate”, the denominator is restricted to woman of child bearing age (i.e. 15-49 years); older women and younger girls are excluded because they are not “at risk” of becoming pregnant. It is restricted solely to those who are capable of having or acquiring the disease or condition in question.

For example, Of the 120 cases of PLHIV admitted to hospital ‘A’ last year, 40 were children. The proportion (percentage) of children among cases is $(40/120) \times 100$ or 33.33 percent. It may be useful for the hospital administrator to know that 33 percent (one-third) of PLHIV hospitalizations occur in the pediatric age group and 67 percent (two-thirds) occur in adults. S/he can thus plan the number of beds and staffing of various categories required to take care of PLHIV. However, for public health, these data are of limited use, since they say nothing of who is at risk for getting HIV.

In a **prevalence rate**, “x” is the number of existing cases, new and old, in a defined population during a specified period (period prevalence) or at a given point in time (point prevalence).

Period prevalence measures the frequency of all cases existing during a defined period of time (annual prevalence) expressed in relation to a defined population.

$$\frac{\text{Number of existing cases (old+new) during a given period of time interval}}{\text{Estimated mid-interval population at risk}} \times 100$$

The “point” in **point prevalence** may for all practical purposes consist of a day, several days or even a few weeks depending upon the time it takes to examine the population sample. It can be made specific for age, sex, and other relevant factors or attributes.

$$\frac{\text{Number of current cases (old+new) existing in a given point in time}}{\text{Estimated population of the same point in time}} \times 100$$

Measurement of HIV prevalence:

HIV prevalence is the number of PLHIV and includes persons with any stage of HIV disease (newly acquired infections, long-standing asymptomatic infections and late-stage disease, including AIDS). Prevalence includes HIV-infected persons who may not be aware of their infection but does not include HIV-infected persons who have died. It is difficult to have a complete and accurate count of all persons infected with HIV. As a result, prevalence is often estimated. HIV prevalence estimates can be done using a variety of data sources, including HIV/AIDS case reports and results from surveys and special studies. In Nepal, HIV prevalence information is assessed in regular intervals through IBBS surveys and routine programs (HIV testing and counseling sites and other health institutions).

Uses of prevalence:

It helps to estimate the magnitude of health/disease problems in the community, and identify potential high-risk population.

It is useful for administrative and planning processes. E.g. hospital beds, human resource needs, rehabilitation facilities etc.

10.4 Longitudinal Study / Incidence Study (Time: 25 minutes)

Longitudinal study involves studying the same group of individuals over an extended period of time. Data is first collected at the outset of the study, and may then be gathered repeatedly throughout the length of the study. In some cases, longitudinal studies can last several decades. It is also called as follow up study.

The benefit of this type of research is that it allows researchers to look at changes over time. Because of this, longitudinal methods are particularly useful when studying development and lifespan issues.

However, longitudinal studies require enormous amounts of time and are often quite expensive. Because of this, these studies often have only a small group of people, which makes it difficult to apply the results to a larger population. Another problem is that research participants sometimes drop out of the study, shrinking the sample size and decreasing the amount of data collected.

Where it is more relevant?

If we have the objective to determine whether rate of development of AIDS is affected by category of exposure to HIV and whether the more rapid development found in older people persists for each exposure category, we can conduct longitudinal study of people with known date of sero-conversion to HIV. These people might have been infected with HIV through use of injected drugs, homosexual sex, or heterosexual sex.

Facilitator should ask “what is incidence study?”

Before explaining about incidence study, it is better to describe “incidence rate”, “cumulative incidence rate”, “person time incidence” at first.

An **incidence rate** is the occurrence of new cases of a disease within a defined population at risk during a specified period of time. In this situation, “x” is the number of new cases in the defined population which had its onset during a specified period of time, and “y” is the average size of the defined population at risk in which disease could occur during the time period specified, usually at the middle of the time period.

$$\frac{\text{Number of well persons at beginning and became sick by the end of the observed intervals}}{\text{Number of well persons who are at risk of developing disease during the same period of time}}$$

OR

$$\frac{\text{Number of new cases of disease during a specified time period}}{\text{Number of population (dynamic population) at risk (at mid interval)}}$$

Cumulative incidence rate: Rates may change over time. It is calculated in a closed population (without migration). Total number of population is constant over the observed time period. Every person contributes the same amount of “at risk” time period (range: 0 to 1)

$$\frac{\text{Number of new cases of disease during a specified time period}}{\text{Number of population (static population) at risk at the beginning of the time}}$$

For example, if there had been 500 new cases of an HIV in a population of 300,000 in a year, the incidence rate would be :

$$\frac{500}{300,000} \times 1,000 = 1.66 / 1,000/ \text{ year}$$

Or we can say 1.66 per 1,000 per year (we can't say 1.66 per 1,000)

It is used to estimate the probability of, or risk of developing a disease during a specific time period. If incidence rate goes up, the probability of getting disease also goes up. Incidence measures the rate at which new cases occurring in a population. It is not influenced by the duration of the disease. If incidence rate is increasing, it might indicate failure or ineffectiveness of the current control programs. Rising incidence rate suggest the need of new disease control or preventive program or that reporting practices and improved. A change or fluctuation in the incidence of disease may also mean a change in the etiology of disease, e.g. change in the agent, host and environment characteristics. So, it indicates the rapidness of the spread of the disease during the specified time period. It is an indicator for potentially of the disease in causing epidemic in a population.

Measurement of incidence of HIV

The information on HIV incidence is important to know the direction of the HIV epidemic, and the effectiveness of HIV prevention programs which result in a decrease in the number of new infections.

The use of sentinel HIV sero-surveillance to estimate HIV incidence is to measure the rate of new HIV infections to monitor the trends in HIV prevalence among the youngest group (15-19 or 15-24 years) of women attending antenatal clinics. But in Nepal, trends in HIV prevalence among young populations at higher risk of HIV are recommended to identify the recent HIV infections among them.

Uses of incidence:

To control disease,

For research into etiology and pathogenesis, distribution of diseases, and efficacy of preventive and therapeutic measures.

10.5 Class Exercise (Time: 20 minutes)

■ Class Work and Discussion

The training facilitator should hang up the flip charts that you used to show exercise and these should be visible to all the participants.

The following table presents STI data for district 'A', which has received a large number of immigrants in recent years.

Number of STI cases, district 'A', 2008-2012

| Year | STI Cases | Population |
|------|-----------|------------|
| 2008 | 30,858 | 492,810 |
| 2009 | 36,602 | 585,540 |
| 2010 | 46,172 | 738,870 |
| 2011 | 56,439 | 891,280 |
| 2012 | 68,392 | 1,044,620 |

- Describe in words the trends in the number of cases.
- Calculate the incidence rate of STI cases/100 population for each year and describe the trend in words
- Compare the trend in the number of STI cases and the trend in rates. How do you explain your observations?
- Which is the more appropriate measure to monitor changes over time in the area?

10.6 IBBS Surveys (Time: 60 minutes)

Facilitator should ask "what is survey?"

A survey may be defined as an investigation in which information is systematically collected. The term survey is sometimes used in a narrow sense to refer specifically to a "field survey".

Facilitator should ask "what is surveillance?"

Surveillance may be defined as the process of systematic collection, orderly consolidation, and analysis of data, with prompt dissemination and feedback of the results to those who need to know, particularly those who are in a position to take action. Surveillance generally uses methods distinguished by their practicality, uniformity and rapidity rather than by accuracy or completeness. It is usually based on information collected as part of routine health care, although it may sometimes be based on repeated purposive surveys.

Uses of surveillance

- Determine trends over time,
- Gather simple information on determinants of risk or other geographical subdivisions, disease, geographical subunits or categories of individuals at risk (districts or age groups with higher rates),
- Detect the occurrence of disease (sporadic, endemic, epidemic),
- Monitor the level of resistance,
- Set goals and targets based on information regarding prevalence and trends in order to design health intervention,
- Assess whether health goals and targets are being reached.

Facilitator should ask “what is behavioral surveillance?”

Behavioral surveillance involves regular, repeated cross-sectional surveys collecting data on HIV risk behaviors and other relevant issues that can be compared over time.

Cross-sectional surveys collect information from a selected sample of a target population at one point in time or over a short period of time. In surveillance, the same survey or a similar survey is repeated with the same target population (but a different sample of people) at regular intervals. This enables us to explore behavioral changes over time.

When designing a behavioral surveillance system, we should consider:

- Whom to include in surveillance,
- Where to access the surveillance populations,
- How to link biological and behavioral surveillance data,
- Methods to confirm the diagnosis of the disease in question and the quality of those, and
- How to ensure that surveillance is appropriate for the context.

High-risk groups [such as PWIDs, FSWs, CSWs, MSM, migrant laborers, young people, and para-public forces (army, police, and armed-forced police)] often considered for inclusion in behavioral surveillance, which measures HIV risk behaviors in groups whose behaviors, occupations or lifestyles could expose them to higher risk of acquiring and transmitting HIV than the rest of the population.

The populations included in surveillance can be accessed either in ‘sentinel sites’ or in the community. *Sentinel sites* are facilities such as STI clinics, antenatal care clinics, blood donation centers, drug treatment programs, prisons and needle exchange programs. *Community sites* are locations in the community, such as households or brothels. Sentinel surveillance is often more convenient, cheaper and has fewer ethical implications than population-based surveillance. Using antenatal clinics as sentinel sites is less problematic, as women attending antenatal care are considered to be a reasonable proxy for the general population.

In *unlinked anonymous testing*, a sample of blood originally collected for other purposes is tested for HIV. The person whose blood is taken does not know that his or her blood will be tested for HIV. All information that could identify the person is removed from the sample so that the results of the test cannot be linked back to that person.

Selecting indicators for behavioral surveillance

Behavioral surveillance indicators should measure aspects of behaviors that are key to the spread of HIV, including **(a)** behaviors that determine the likelihood that an uninfected person will come into contact with an infected person (number and type of sexual partners, patterns of needle exchange, etc.), and **(b)** behaviors that determine the likelihood that transmission of HIV will occur if contact with an HIV infected person comes about (level of condom use, equipment sharing practices, etc.). The likelihood of transmission is also determined by other factors, such as the presence of other STI infections.

Some essential indicators among

General population

- Proportion who had commercial sex in past year,
- Frequency of commercial sex in past year,
- Proportion who had non-regular/casual partners in past year,
- Frequency of non-regular/casual partners in past year,
- Last time and consistent condom use by partner type,
- Proportion of PWIDs in past year, and
- Proportion of alcohol abusers.

PWIDs

- Proportion who shared needles last time, and
- Proportion who did not use clean needles consistently in past week (or other time reference period).

CSWs

- Last time and consistent condom use with clients, and
- Proportion who injected drugs in past year.

Behavioral measures among sex workers

Measuring changes in sexual behavior among **sex workers** helps explain trends in HIV and STI prevalence data. Among sex workers, new behavioral trends may emerge rapidly, particularly when programs and resources are targeted to promote safe behavior in this group.

Basic indicators of HIV risk among **sex workers** include:

- Percent of sex workers who received HIV testing in the last 12 months and who know the results,
- Percent of sex workers who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV,
- Percent of sex workers reporting the use of a condom with their most recent clients in response to prompting, correct identification of the use of condoms as means of protection against HIV infection,
- Consistent condom use during every episode of vaginal intercourse during the preceding three months,
- Age at which enter into sex,
- Having been forced to have sex in the last 12 months,
- Sex while intoxicated during the last 12 months, and
- Exposure to HIV and AIDS program in the last 12 months.

These basic indicators may be supplemented with local measures of particular importance in the area (as determined by formative research phase). These additional indicators may include:

- Sex work venues,
- Number of clients,
- Number of non-client sex partners, types,
- Condom use with non-client partners,
- Injection drug use,
- Migration, mobility,
- Sexual network,
- STI treatment-seeking,
- History of imprisonment,
- History of Alcohol abuse,
- Marital status, and
- Basic demographic characteristics.

Behavioral measures among PWIDs

Measuring changes in injection and sexual behavior among **PWIDs** helps explain trends in HIV and STI sero-prevalence data. The sharing of needles and syringes provides a very efficient means for the parenteral spread of HIV infection. The probability of HIV infection among PWIDs is proportional to the frequency of needle and syringe sharing. The more frequent the sharing, the higher the risk. Some drugs may result in more frequent injection than others. For example, cocaine and methamphetamine injection may become more frequent than heroin injection in many cases. Consequently, the type of drug determines the frequency of injection and, hence, the risk of HIV.

In broad strokes, behavioral surveillance of PWIDs attempts to measure:

- The frequency of needle and syringe sharing, and
- The frequency of unprotected sex.

The basic indicators of HIV risk among PWIDs include:

- The percent of PWIDs who have adopted behaviors that reduce transmission of HIV (that is, who have both avoided non-sterile injecting equipment and used condoms in the last month),
- The percent of PWIDs active in the last month who report sharing needles, syringes or other injecting equipment the last time they injected drugs,
- The percent of PWIDs who received HIV testing in the last 12 months and who know the results,
- The percent of active PWIDs surveyed who report never sharing injecting equipment during the last month,
- The percent of PWIDs surveyed who used a condom the last time they had sex, of those who have had sex in the last 12 months,
- The percent of PWIDs surveyed who used a condom the last time they had sex with a non-regular partner in the last 12 months, and
- The percent of PWIDs surveyed who used a condom the last time they had sex with a regular partner in the last 12 months.

These basic indicators may be supplemented with local measures of particular importance such as:

- Injecting locations (for example, shooting galleries),
- Frequency of injections,
- Types of drugs injected,
- Those with whom PWIDs share needles and syringes,
- Size of social network, drug injecting network,
- Condom use,
- History of imprisonment,
- History of sex work, and
- Contact with FSWs.

Behavioral measures among MSM

Measuring changes in sexual behavior among **MSM** helps to explain trends in HIV and STI sero-prevalence data.

Behavioral surveillance of MSM attempts to determine:

- The frequency of unprotected sex,
- The characteristics of partners of MSM, and
- The frequency of injection drug use.

Behavioral surveillance of MSM may collect information on:

- Condom use,
- Number of partners,
- Type of partners,
- Frequency of unprotected insertive anal intercourse,
- Frequency of unprotected receptive anal intercourse,
- STI treatment-seeking,
- Migration patterns,
- Marital status,
- History of sex work,
- HIV test-seeking and result-seeking,
- History of imprisonment,
- PWIDs,
- Contact with sex workers, and
- MSM venues.

When conducting behavioral surveillance of MSM, specific indicators may include:

- Percent of MSM reporting the use of a condom the last time they had sex with a male partner,
- Percent of MSM who have had anal sex with more than one male partner in the last 12 months, and
- Percent of male sex workers reporting the use of a condom with their most recent client.

Behavioral measures among migrants or mobile populations

Measuring changes in sexual behavior among **migrants** or **mobile populations** helps explain trends in HIV and STI prevalence data. Among mobile persons, new behavioral trends may emerge rapidly, particularly when programs and resources are targeted to promote safe behavior in this group.

The basic indicators of HIV risk among mobile populations (truck drivers, in particular) include:

- Correct identification of ways of preventing the sexual transmission of HIV and rejection of major misconceptions about HIV transmission,
- Condom use during last sex with a non-marital, non-cohabiting partner,
- Condom use with spouse,
- Correct identification of the use of condoms as means of protection against HIV infection,
- Sex with a sex worker in the last 12 months,
- Condom use during sex with a sex worker, of those who report having had sex with a sex worker in the last 12 months, and
- Reported symptoms of STIs in the last 12 months and seeking care at a service provider with personnel trained in STI care.

The additional indicators may include:

- Knowledge of HIV and STIs,
- Number of sex partners, types,
- Condom use with sex partners,
- Sex with other men,
- Sex with other women,
- PWIDs,
- History of genital ulcer disease or genital discharge,
- STI treatment-seeking history and places where care is sought,
- Marital status/regular partnership status,
- Basic demographic characteristics,
- The length of time spent away from home/regular sex partners,
- Where they travel and how often, and
- Whether they cluster in communities that mimic their home/living conditions, types of social support.

Uses of **behavioral surveillance** include the following:

- To provide an early warning of which groups and areas infection is likely to spread in and between.
- To explain changes in HIV prevalence over time – without behavioral data, biological surveillance data are difficult to interpret.
- To provide information for developing prevention programs – measuring the prevalence of HIV alone does not provide all the information needed to design effective policy and programs. Behavioral data allows us to identify the populations and behaviors that are driving the epidemic and that should be targeted in programs.
- To monitor and evaluate the impact of prevention programs. Surveillance can be a useful tool for monitoring and evaluating HIV/AIDS prevention programs that target the populations or the geographical areas included in surveillance. The national monitoring and evaluation strategies for HIV/AIDS should, therefore, incorporate indicators derived from behavioral surveillance data.
- While surveillance is useful for evaluating programs, like most evaluation methods, it does not provide conclusive evidence that the program caused any observed changes in behavior. Any observed change may have occurred even without the program because of some other factor.

Facilitator should ask “what is biological surveillance?”

It helps in understanding biological data over time. Biological surveillance includes various kinds of technology (ELISA, Western Blot, rapid tests, etc) in order to explain their validity and utilization in different types of epidemics, as well as the principles of handling biological specimens.

Biological surveillance of HIV infection is used to assess the prevalence and incidence of HIV in different populations at higher risk of infection, or in the general population, and monitor trends in HIV prevalence and incidence over time. Biological surveillance enables to identify groups with the highest needs for public health and clinical interventions, and evaluate public health measures aimed at prevention and control of HIV infection.

Biological measures among sex workers

Measuring HIV sero-prevalence among **sex workers** is an integral component of surveillance. The high sexual risk among sex workers also makes STI testing a useful and feasible indicator for surveillance.

- *Syphilis* testing is often the most efficient biological indicator because the standard tests can be done with the same serological specimen as HIV testing. The test is relatively inexpensive and widely available. However the results do need to be interpreted carefully to not only eliminate low false positive rates but also latent infections not associated with recent risky behaviors.
- Accurate tests for *Gonorrhoea* and *Chlamydia* are expensive and usually require a urine specimen.
- *Herpes Simplex Virus type-2* (HSV-2) testing is a marker for lifetime sexual risk. However, it is less available. To be an indicator for sexual risk, the test needs to distinguish HSV-2 from HSV-1.

In areas where there may be suspected overlap between sex workers and IDUs, biological markers may include *Hepatitis C Virus* (HCV). Tests for HCV may be expensive.

Biological measures among PWIDs

Measuring HIV sero-prevalence among **PWIDs** is an integral component of surveillance. Biological measures that also serve as markers for risk of parenteral infection include the following.

- Anti-hepatitis B core antigen (anti-HBc) is a non-specific marker of acute, chronic or resolved HBV infection. Anti-HBc is usually found in chronic HBV carriers, as well as those who have cleared the virus, and usually persists for life.
- Hepatitis B surface antigen (HBsAg) is a marker of infectivity. Its presence indicates either acute or chronic HBV infection. In some people (particularly those infected as children or those with weak immune systems, such as those with AIDS), chronic infection with HBV may occur when HBsAg remains positive.
- Hepatitis C (test may be expensive).

PWIDs are also at risk of HIV through sexual behavior. Biological markers for STIs may also be considered in surveillance for PWIDs.

Biological measures among MSM

Measuring HIV sero-prevalence among **MSM** is an integral component of surveillance. The high sexual risk among MSM also makes STI testing a useful indicator for surveillance. The biological measures to include in surveys of MSM are similar to those for FSWs and may include:

- *Syphilis*,
- *Gonorrhoea* (urethral, rectal and pharyngeal),
- *Chlamydia* (urethral, rectal and pharyngeal), and
- *HSV-2*.

In areas where there may be suspected overlap between MSM and IDUs, HCV may also be a useful biological marker.

Biological measures among migrants or mobile persons

As in most other surveillance systems, biological specimens should be drawn for testing for prevalence of HIV and other STIs. The high sexual risk among **migrants** or **mobile persons** also makes STI testing a useful and feasible indicator for surveillance.

- *Syphilis* testing is often the most efficient biological indicator because the standard tests can be done with the same serological specimen as HIV testing. The test is relatively inexpensive and widely available. However, the results do need to be interpreted carefully to not only eliminate low false positive rates but also latent infections not associated with recent risky behaviors.
- Accurate tests for *Gonorrhoea* and *Chlamydia* are expensive and usually require a swab or blood specimen.
- *HSV-2* testing is a marker for lifetime sexual risk. However, it is less available. To be an indicator for sexual risk, the test needs to distinguish *HSV-2* from *HSV-1*.

Facilitator should ask “what is IBBS?”

It helps in understanding biological and behavioral data over time and ensures behavioral and biological samples are alike showing that there is IBBS. Behavioral and biological data can be used to reinforce each other's findings. It can be cheaper if data collection activities are combined.

Linkage between biological and behavioral surveillance data:

To ensure data are complementary and useful, behavioral and biological surveillance are best planned together. One should decide how behavioral and biological data are best linked before planning.

- Collecting HIV, STI and behavioral data from the same individuals at the same time,
- Collecting HIV, STI and behavioral data from the same source population at different times,
- Analyzing HIV, STI and behavioral data from similar source populations, using whatever data are available, and
- Reporting behavioral and biological surveillance together.

10.7 Game (Time: 30 minutes)

- The Rainstorm

Objective: To energize the group

The group forms a circle and the training facilitators' stands inside. Only after eye contact each participant should copy the facilitator's action and continue these until next eye contact is made. The sequence is as follows: Click Fingers, Clap Hands, Pat Thighs, Stamp Feet, Slap Thigh and Stamp Feet, Stamp only, Slap Thighs, Clap Hands, Click Fingers, etc.

MODULE 11

Data Collection Tools and Techniques

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) State various data-collection tools and techniques,
- (b) Illustrate observation check list and techniques,
- (c) Illustrate various kinds of interview questions/checklists,
- (d) State check list for FGD and techniques for conducting FGD,
- (e) Define tools, reagents and chemicals used in laboratory settings,
- (f) Describe methods for collecting biological samples including its techniques and
- (g) Describe ethical principles involved during data collection period.

Time Frame: 360 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Brainstorming, Plenary session, Assessment/Presentation and Discussion

Course Contents

- a. Overview of Data-collection Tools and Techniques
- b. Observation Check list and Techniques
- c. Design of Interview Questions/Checklists (including techniques) and Questionnaires Preparations in Appropriate Languages
- d. Checklist (including questioning routes) for FGD and Technique
- e. Tools, Reagents and Chemicals used in Laboratory Settings and Biological Specimen Collection Method and Technique including Quality Control Tests
- f. Standard Operating Procedure for Tools and Techniques
- g. Ethical Principles adopted during Data Collection Period

Group Exercise

- Small Group Discussion

Game

- Catch Partner

11.1 Overview of Data-collection Tools and Techniques (Time: 15 minutes)

Facilitator should ask “what is data?”

Data is a set of signals which will be converted into information after processing it properly. There are two types of data – qualitative and quantitative, and these are obtained either from primary or secondary sources. Data can be originated from household, community, health facilities (SHPs, HPs, PHCCs, Hospitals), private clinics, laboratory, etc.

Facilitator should ask “what is the difference between tools and techniques?”

Tool(s) are instruments/means of collecting data e.g. data collection forms (questionnaire, observational sheets etc.), instruments that collect data sets – weighing machine, thermometer, stethoscope etc. Techniques are ways of collecting data e.g. techniques adopted while collecting the data.

| Data Collection Tools | Data Collection Techniques |
|---|--|
| Observational sheet, where data collector will write the information | Observing techniques (participant/non-participant) or (Direct/Indirect) as reflected in observation guide |
| Data collection form (FGD, questionnaire etc.) where information will be written either through Discussion, or using some instruments such as thermometers, stop watch, weighing machine, laboratory findings | Ways of collecting information through discussion (FGD Guide) and interview (interview guide) Ways of using instruments in order to generate information to be included in the data collection form |
| Questionnaire which may be in the form of Interview | Interviewing techniques as reflected in the interview guide (in-depth interview, key informant interview, etc.) |
| Survey form | Mapping (social, resource and mobility) for displaying various relationships. Note Taking techniques Photographic and recording techniques |
| Data collection form to be filled by telephones and mobiles phones | Talking and note taking technique |

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

Example:

During a nutrition survey, three different weighing scales were used in three villages. The researchers did not record which scales were used in which village. After completion of the survey, it was discovered that the scales were not standardized and indicated different weights when weighing the same child. It was, therefore, impossible to conclude in which village malnutrition was most prevalent.

Various data collection techniques can be used such as:

- Using available information/secondary information
- Observing
- Interviewing (face-to-face)
- Administering written questionnaires
- Focus group discussions
- Projective techniques, mapping, scaling

Using available information

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

For example, analysis of the data routinely collected by health facilities can be useful for identifying problems in certain interventions or in flows of ARV therapy supply, or for identifying increases in the incidence of HIV.

Analysis of health system data, census data, unpublished reports and publications in archives and libraries or in offices at the various levels of health and health-related services, may be a study in itself. Usually, it forms part of a study in which other data collection techniques are also used.

The use of **key informants** is another important technique to gain access to available information. Key informants could be knowledgeable community leaders or health staff at various levels and one or two informative members of the target group (e.g., adolescents on their sexual behavior). They can be involved in various stages of the research, from the statement of the problem to analysis of the data and development of recommendations. Other sources of available data are **newspapers** and published **case histories**, e.g., patients suffering from AIDS, or their relatives, telling their experiences and how they cope.

Note:

In order to retrieve the data from available sources, the researcher will have to design an instrument such as a checklist or compilation sheet. In designing such instruments, it is important to inspect the layout of the source documents from which the data is to be extracted. For health information system data, for example, the data compilation sheet should be designed in such a way that the items of data can be transferred in the order in which the items appear in the source document. This will save time and reduce error.

The advantage of using existing data is that collection is inexpensive. However, it is sometimes difficult to gain access to the records or reports required, and the data may not always be complete and precise enough, or too disorganized. It might be necessary to get written permission from the owner of the data for its use.

11.2 Observation Check list and Techniques (Time: 15 minutes)

Facilitator should ask “what is observation?”

It is a technique of looking, looking critically, openly looking for evidence and information. It is a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as it takes place. It records behavior and characteristics of living beings, objects or phenomena.

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

Facilitator should ask “when is observation appropriate?”

It is appropriate:

- Where full and/or accurate information cannot be elicited by question.
- When you want to learn about the interaction in study.
- Ascertain the functions performed by the health worker,
- Study behavior/personality trait.

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

Types of Observations

Participant Observation: Observer takes part in the situation i.e. observer has every chance to interact, Disclosing or not disclosing his/her identity.

Non Participant Observation: Observer does not take part in the situation i.e. observer has no chance to interact. Sit quietly in the corner observing the setting, openly or concealed.

Observations can be **open** (e.g., ‘shadowing’ a health worker with his/her permission during routine activities) or **concealed** (e.g., ‘mystery clients’ trying to obtain antibiotics without medical prescription). They may serve different purposes. Observations can give additional, more accurate information on behavior of people than interviews or questionnaires. They can also check on the information collected through interviews especially on sensitive topics such as drug use, or stigmatizing diseases. For example, whether community members share drinks or food with patients suffering from feared diseases (HIV/AIDS) are essential observations in a study on stigma.

Observations of human behavior can form part of any type of study, but as they are time consuming and most often used in small-scale studies.

Observations can also be made on objects. For example, the presence or absence of a ART corner and its state of cleanliness may be observed. Here observation would be the major research technique.

If observations are made using a defined scale they may be called measurements. Measurements usually require additional tools. For example, in nutritional surveillance we measure weight and height by using weighing scales and a measuring board. We use thermometers for measuring body temperature.

For example, in a research study on HIV transmission, a researcher may **observe** that some men who approach women in a particular social setting are transient truck drivers, whereas others are local residents. Previously, researchers may not have known that women had sexual relationships with men who lived outside the community. This information could be used to develop more meaningful questions for interview guides. For example, researchers might now ask whether it is more or less difficult for women to negotiate condom use with truck drivers than men who live in the community on a more permanent basis. So, using participant observation, it is very easy to develop interview questions.

11.3 Design of Interview Questions/Checklists (including techniques) and Questionnaire Preparation in Appropriate Languages (Time: 60 minutes)

Facilitator should ask “what is interview?”

It is a verbal interchange in which one person, that is, the interviewer attempt to elicit information or expression of opinion, belief from another person. It involves oral questioning of respondents, either individually or as a group.

Answers to the questions posed during an interview can be recorded by writing them down (either during the interview itself or immediately after the interview) or by tape-recording the responses, or by a combination of both.

Facilitator should ask “how interview can be conducted?”

Interviews can be conducted with varying degrees of flexibility. The two extremes, high and low degree of flexibility, are described below:

High degree of flexibility:

For example: When studying sensitive issues such as teenage pregnancy and abortions, the investigator may use a list of topics rather than fixed questions. These may, e.g., include how teenagers started sexual intercourse, the responsibility girls and their partners take to prevent pregnancy (if at all), and the actions they take in the event of unwanted pregnancies. The investigator should have an additional list of topics ready when the respondent falls silent, (e.g., when asked about abortion methods used, who made the decision and who paid). The sequence of topics should be determined by the flow of discussion. It is often possible to come back to a topic discussed earlier in a later stage of the interview.

The unstructured or loosely structured method of asking questions can be used for interviewing individuals as well as groups of key informants.

A flexible method of interviewing is useful if a researcher has as yet little understanding of the problem or situation S/he is investigating, or if the topic is sensitive. It is frequently applied in exploratory studies. The instrument used may be called an interview guide or interview schedule.

Low degree of flexibility:

Less flexible methods of interviewing are useful when the researcher is relatively knowledgeable about expected answers or when the number of respondents being interviewed is relatively large. Then questionnaires may be used with a fixed list of questions in a standard sequence, which have mainly fixed or pre-categorized answers.

For example: After a number of observations on the behavior (hygienic) of women drawing water at a well and some key informant interviews on the use and maintenance of the wells, one may conduct a larger survey on water use and satisfaction with the quantity and quality of the water.

Types of Interviews

These are of following types:

Structured Interview, Semi-structured Interview, and Un-structured (non-structured) interview.

‘Structure’ refers to the extent to which the questions are predetermined and degree of flexibility or rigorousness in the interviewing process.

In structured interview, the questions relating to the coverage of items of information of the research study are pre-determined, put-down in a given order and followed rigorously. In this case, well-defined pattern is followed, similar to a questionnaire pre-determined set of questions, using the same wording and order of questions as specified in the Interview Schedule [written list of questions (open or closed) for person to person, and for telephone or other]. It provides uniform information, which assures the comparability of data, and requires fewer interviewing skills than does unstructured interviewing. Information sought through this technique must be specific and usually brief.

In un-structured interview, flexibility is permitted in terms of what questions are to be asked, how they shall be asked and worded or what details of information are to be collected. It offers broad freedom to the respondent in terms of both response and time. It is usually applicable for obtaining the information that is very personal or potentially threatening (in depth information or in-depth interview, or key informant interview). In this case, interviewer develops an interview guide. Using an interview guide as a means of data collection requires much more skill on the part of the investigator than does using a structured interview. Within the guideline interviewer formulates questions spontaneously. It can be carried out in a one-to-one situation or collectively with a group of respondents (group interview or focus group interview). It is extremely useful when little is known about the situation. It is useful for constructing a structured research instrument. It might encounter with interviewer bias.

In semi-structure Interview, both kinds of above said interview techniques might have been implied. It contains a care of structured questions from which the interviewer may move in related directions for in-depth probing. It allows accurate information on certain questions with a built in opportunity for exploration. In this case, training is the most important aspect so that the interviewer knows when and how to probe.

Facilitator should ask “what are the characteristics of good interviewers?”

- Listen carefully and thoughtfully and stay “with” the participant.
- Calm and pretending that they have done this many times before.
- Do not rush the participant but wait.
- If there is a silence, the good interviewer is not uncomfortable because these silences are important, perhaps indicating that the participant is realizing something for the first time and having an insight about a particular event. Continue when ready

Facilitator should ask “what is written questionnaire?”

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

A written questionnaire can be administered in different ways, such as by (a) sending questionnaires by mail with clear instructions on how to answer the questions and asking for mailed responses, (b) gathering all or few of the respondents in one place at one time, giving oral or written instructions, and letting the respondents fill out the questionnaires; or hand-delivering questionnaires to respondents and collecting them later.

The questions can be either open-ended or closed (with pre-categorized answers).

Types of questions

Open ended questions (Examples):

- What is your opinion on the services provided in the field of HIV/AIDS in this hospital? (Explain why)
- What are the probable reasons that some adolescents in this area start using drugs?
- What would you do if you noticed that your daughter (school girl) had a relationship with a teacher?

Partially Categorized Questions (Examples):

How did you become a member of the district AIDS coordination Committee?

| | <i>Details stated</i> |
|---|-----------------------|
| Volunteered | () |
| Elected at a district level meeting | () |
| Nominated by the health staff | () |
| Nominated by the district level leaders | () |
| Other (specify): | |

Closed-ended Questions (Examples):

Women who have extra-marital sex should be severely punished.

| | |
|-------------------|-----|
| Strongly agree | () |
| Agree | () |
| Not sure | () |
| Disagree | () |
| Strongly disagree | () |

Did you eat any of the following foods yesterday?' (Circle yes if at least one item in each set of items is eaten)

| | | |
|----------------------|-----|----|
| Peas, beans, lentils | Yes | No |
| Fish or meat | Yes | No |
| Eggs | Yes | No |
| Milk or cheese | Yes | No |

Principles of Interview Questions and Wording of Questions

Language and Reading Level of Questions

- Should be written in the research participant's preferred language
- Should be made as simple, clear, and specific as possible

Criteria of inclusion of Interview Questions

- Each question should have a single focus and seek only one piece of information.

Duration of Interview Schedule

- The duration may influence respondent's willingness to participate in the research study. It is recommended that interview take not more than 20 to 25 minutes to complete. Beyond that time, respondents may become tired and provide inaccurate responses.

Length of Individual Questions

- Question should be kept as short as possible. A desirable length for a question is 20 words or less. A question may need to be divided into two questions if the length becomes excessive.

Avoid Ambiguous Questions

- Ambiguous questions contain words that have more than one meaning or can be interpreted differently by various people. Examples of such words are:- many, usually, few, often, fair, large, several, and generally. Avoid all words that can have multiple interpretations.

For Example:

What is your income?

Could mean weekly, monthly, annual, family or personal, pretax or after-tax for this year or last year, from salary or from all sources.

- Do you jog regularly? Yes ____ No ____
- Some respondents may define regularly as every day, others as once a week. Ask, do you jog about once a day, or a few times a week or once a week Yes ____ No ____

Avoid Double Negative Questions

“Students should not be required to take a comprehensive exam to graduate”

Agree ()

Disagree ()

Stating double negatives - Disagree, Not doing

Avoid leading questions

Do not let them determine which answer the researcher’s wants. A leading question is the one that leads the respondent to choose one response over another by its wording.

“You don’t smoke, do you?”

Leads respondents to state that they do not smoke

Avoid double barreled questions

Asking two questions in one.

“Do you plan to pursue a master’s degree in public health and seek an administrative position upon graduation?”

Dose this company have pension and health insurance benefits?

Questions Should Contain Neutral Wording.

The researcher seeks accurate responses from the research participants. Any question that implies the type of answer to be given may result in biased responses.

For example:

“Do you believe that smoking is a disgusting habit?” The desired answer is quite obvious. Even if you think that smoking is a disgusting habit, you would not want to bias the answers of respondents.

- (A) What is your opinion about cigarette smoking?
- Neutrally worded question
- (B) Would you say that you are against cigarette smoking?
- Subtly biased question
- (c) You do not believe that people should smoke cigarettes, do you?
- Completely biased question

Avoid Double Blind Questions

Put subjects in a negative light regardless of their answers.

For example:

“Have you stopped beating your wife?”

“Are you still having that so-called pain?”

The answer to this question will put the respondent in a unfavorable light regardless of the answer.

Avoid jargon, slang and abbreviation

Jargon and technical terms come in many forms. Slang is a kind of jargon within a sub-culture.

For example:

Also avoid abbreviations, NHRC usually means Nepal Health Research Council, but for a respondent, it might mean something else (National Human Right Commission).

Avoid asking questions that are beyond respondent's capabilities

Avoid over lapping or unbalanced response categories

5-10, 10-20, 20-30, 5-9, 10-19, 20-29

Are you working or unemployed? Yes ___ No ___

Avoid asking about future intensions

Avoid asking people about what they might do under hypothetical circumstances.

“Suppose a new hospital opened down the road, would you check up at there?”

Ask about current behaviors.

Avoid Illogical question (Illogical order)

11.4 Checklist (including questioning routes) for Focus Group Discussion and Technique (Time: 30 minutes)

Facilitator should ask “what is FGD?”

FGD is a powerful qualitative research tool which provides valuable spontaneous information in a short period of time and at relatively low cost. A FGD allows a group of 6-12 persons to freely discuss a certain subject (focused area) with the guidance of a trained facilitator/moderator.

Facilitator should ask “why is FGD important?”

- To focus research and develop relevant research hypotheses by exploring in greater depth the problem to be investigated and its possible causes,
- To formulate appropriate questions for more structured, larger scale surveys,
- To help understand and solve unexpected problems in interventions,
- To develop appropriate messages for sex education programs and later evaluate the messages for clarity, and
- To explore more ideas on topic that you are interested

Facilitator should ask “when should you consider using FGD?”

- When you are interested in understanding some issue from the perspective of a specific population
- When your study's focus is on cultural norms, expectations, values and beliefs
- When examining attitudes or reactions of a group to some aspect of their environment
- When you are interested in group norms rather than individual behavior

For example,

A district health officer had noticed that there were an unusually large number of cases of malnutrition of children under five reported from one area in his/her district. Because he/she had little idea of why there might be more

malnutrition in that area, so S/he decided to organize three FGDs (one with community leaders, one with mothers from the area and one with health staffs from the area). S/he hoped to identify potential causes of the problem through the FGDs and then develop a more intensive study, if necessary.

In planning a study of the incidence of childhood diarrhea and feeding practices, a FGD showed that in the community under study, children below the age of one year were not perceived as having 'bouts of Diarrhea' but merely 'having loose stools' that were associated with milestones such as sitting up, crawling, and teething. In the questionnaire that was developed after the FGD the concept 'Diarrhea' was therefore carefully described, using the community's notions and terms.

For example,

In district X, the recent National (polio) Immunization Days (NID) showed widely different coverage's per village (50-90%) and in a number of villages a marked decrease in coverage was observed compared to last year. Eight FGDs were held with mothers, two in town, three in rural villages with a marked decrease in NID coverage and three in villages with a high coverage throughout. It appeared that overall; the concept NID had raised confusion. Most people believed that this mass campaign strengthened the children's immunity against any (childhood) disease, including Malaria and Respiratory Tract Infections. In the villages with a low NID coverage there had been a high incidence of malaria in children immediately after the previous NID campaign and several children died. Mothers therefore believed that the NID campaign was useless.

FGD Techniques

- Conducted in a relaxed atmosphere to enable participants to express themselves without any personal inhibitions.
- Participants usually share a common characteristic such as age, sex, or socio-economic status that defines them as a member of a target subgroup. This encourages a group to speak more freely about the subject without fear of being judged by others thought to be superior.
- The discussion is led by a trained facilitator (preferably experienced), assisted by an observer/note taker who takes notes and arranges any tape recording. The moderator uses a prepared guide to ask very general questions to the group. Usually more than one FGD is needed to assure good coverage of responses to a set of topics. Each session usually lasts between one and two hours but ideally one to one and half hour.

11.5 Group Exercise (Time: 60 minutes)

- Small Group Discussion

The training facilitator should divide randomly all the participants into smaller groups consisting of five to eight people in one group. Following objective matrix need to be given in the group.

| Specific Objectives | Methods | Tools/Techniques |
|---|--------------------------------------|--------------------------------------|
| To identify socio-cultural and economic factors that may influence the defaulter rate of HIV patients | Quantitative Method | Questionnaire |
| To identify the factors related to ARV therapy and related services offered | Quantitative and Qualitative Methods | Questionnaire and Observation |
| To identify the disease related factors | Quantitative and Qualitative Methods | Questionnaire and In-depth Interview |

Facilitator should ask the group to prepare the tools and techniques for each of those specific objectives.

Facilitator should give at least five minutes to read objective matrix, and inform them to discuss among themselves for 10 minutes. Facilitator should tell them to prepare the specific tools and techniques based on the specific objective mentioned above. This might take 25 minutes. Immediately after that identified tools and techniques will be presented during plenary session, which will be conducted for 20 minutes.

11.6 Tools, Reagents and Chemicals used in Laboratory Settings and Biological Specimen Collection Method and Technique including Quality Control Tests (Time: 60 minutes)

The most common, cost-effective, and accurate method of diagnosing HIV infection is via a blood test that looks for antibodies to HIV. Antibodies are the body's reaction to HIV and other foreign substances. Other methods that can be used are rapid HIV antibody tests that use blood, saliva, or urine. However, most countries rely on blood tests to confirm HIV status. Before an HIV test can be performed a trained HIV counselor will discuss the test, how to understand its results, and what effect testing will have on your life in detail.

Note: CD4 lymphocyte count is a prerequisite for the initiation of antiretroviral therapy and viral load for monitoring treatment outcome and for monitoring the disease progression. Antibodies to HIV are detectable within three to eight weeks of infection by commonly employed tests and in virtually all infected individuals within six months

HIV Screening

The most ready-to-use types of rapid tests are lateral flow rapid tests, which do not require reagents. In general, rapid tests are cheap, portable and easy to use, require no reagents or equipment and provide results within 30 to 60 minutes. Each test rapidly detects antibodies against HIV-1 and/or HIV-2 from a small volume of plasma, serum, whole blood, saliva or urine, with high specificity and sensitivity.

Fear of stigmatization from testing positive for HIV can deter at-risk individuals from seeking consultation and can make people reluctant to disclose their HIV status. The use of saliva and urine specimens for rapid testing offers a discrete alternative to blood-based tests in settings where stigma, lack of education, cultural practices and privacy concerns undermine HIV prevention. However often such tests are less accurate and so care should be taken when selecting a non-blood sample rapid test.

Understanding your HIV Test Results

There are a number of different tests that can be used to diagnose HIV infection. The most commonly used tests are called "HIV antibody tests."

Standard antibody HIV testing can have two stages. The most commonly used initial screening test is either an Enzyme Immune Assay (EIA) or the Enzyme-Linked Immunosorbent Assay (ELISA). If the EIA/ELISA test is negative, no additional testing is done. If the EIA/ELISA screening test is positive, that result must be confirmed with a more specific test using Polymerase Chain Reaction (PCR), which is a molecular method for identifying the presence of viral DNA or RNA.

Rapid HIV testing using oral fluids or blood specimens are EIA/ELISA screening tests that provide results in 20 minutes. This kind of test has been shown to be highly accurate (99.5%) and comparable to the blood tests that are performed in a laboratory. A positive result from a Rapid EIA test is considered "preliminarily positive" (Figure 1a and 1b) and must be confirmed with a specific test using PCR performed in a laboratory if that is the national guideline for HIV confirmation

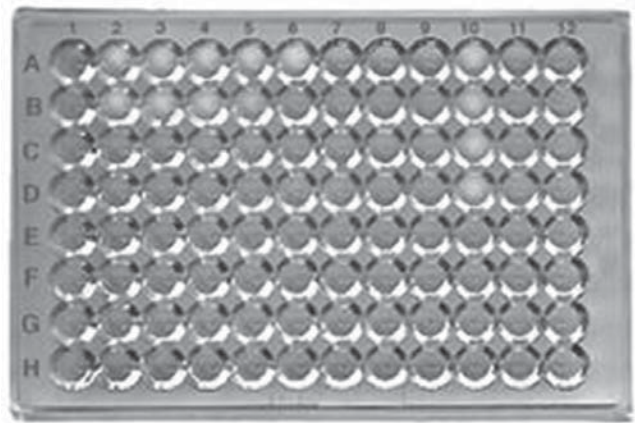
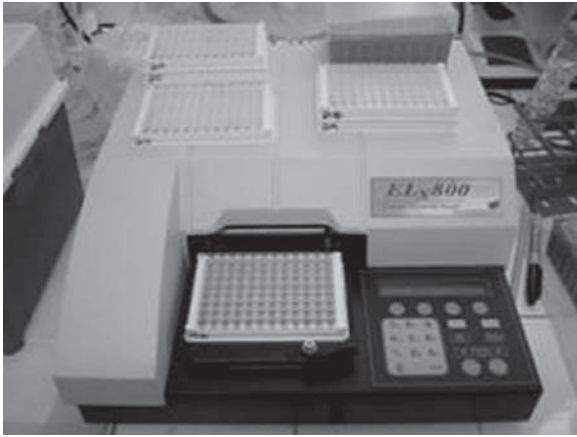


Figure 1a. After several incubation and wash steps, a color reaction occurs if HIV antibody is present.



Figure 1b. An automated reader gives a measurement of optical density (presence of color) for each well

HIV Antibody Testing:

HIV antibody tests can have three different results: positive, negative or indeterminate (inconclusive).

A **positive** result on a double confirmed HIV antibody test (followed by EIA or ELISA and PCR) means that HIV antibodies are truly present and the person is infected with HIV (called “HIV positive”).

A **negative** result on an HIV antibody test means that most likely you are not infected with HIV. However, it can take three to six weeks, and sometimes up to three months (and in few cases up to six months) before HIV antibodies show up on a standard test. As a result, some people who are recently infected with HIV may still have a negative test result during this time. This is called the “window period.” The window period is why it is important to be tested for HIV regularly.

An **indeterminate/inconclusive** result means that the antibody test was neither positive nor negative. This may be a result of:

- Recent HIV infection,
- Prior blood transfusions, even with non-HIV infected blood,
- An autoimmune disease such as diabetes,
- Being a recipient of an experimental HIV vaccine,
- Use of a hemolyzed sample,
- Not following the test procedure,
- Use of an expired test or one that has not been stored under the correct conditions,
- Or problems with the test procedure itself, such as contamination of the blood sample.

If a person has an indeterminate HIV test result, the test should be repeated. If the test results continue to be indeterminate, there are other tests that may be done to detect an infection.

Western Blot (Line Immunoassay) Tests illustrate the Window Period

It is based on using an electrophoretic technique to separate HIV antibodies. It detects antibodies to specific HIV antigen on cellulose strip. In this assay, multiple antibodies against HIV-1 and HIV-2 are detected.

Below is the photograph of Western Blot test (Figure 2). On the left side of the image there are two columns to be used as points of comparison. The column marked "NC" is an HIV-negative test result and the column marked "PC" is an HIV-positive test result. Columns three to 10 show a series of tests on an individual person who became infected with HIV to illustrate how an HIV test result can change during the window period from HIV-negative to HIV-positive. Each column is one Western Blot test. These tests were performed on a single person beginning with the day the person was first infected with HIV (Column three, Day 0) to when the person had a conclusive HIV infection (Column 10, Day 30). Each black or dark grey horizontal stripe is representative of the presence of a different antibody against a protein found in HIV. To be conclusive (HIV-positive), a Western Blot must have five horizontal stripes. An HIV infection is not the same as an AIDS diagnosis.

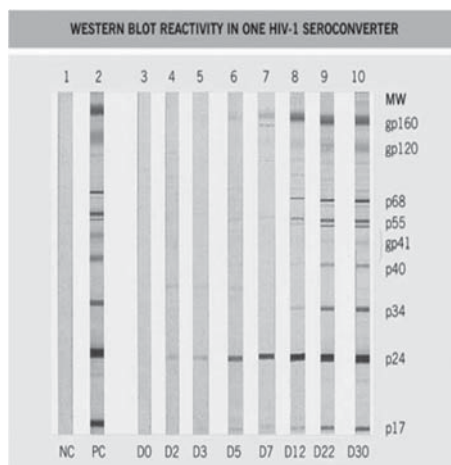


Figure 2. Western Blot Reactivity in one HIV-1 sero-converter

Polymerase Chain Reaction Testing:

A PCR test is used to measure the amount of HIV in an HIV-positive person's blood. Because this test looks for HIV directly in a person's blood instead of detecting antibodies (the body's reaction to HIV), it may detect an HIV infection about a week after an exposure. Therefore the PCR test is used by researchers and health care providers to identify infections during the window period, and considered as gold standard technique and can be used for early detection in individuals before antibodies are formed.

When to initiate ARV therapy?

Infection with HIV leads to the development of AIDS, which is characterized by the loss of CD4 T cells that are required for proper functioning of a person's immune system. Assays that detect CD4 T cells in whole blood specimens are relied on to determine the appropriate time to initiate ARV therapy in HIV+ people, preferably before clinical signs of disease develop. In 2006, the World Health Organization (WHO) recommended that if the CD4 value is between 200 and 350 cells/ μ L, the decision to begin ARV therapy should depend on clinical stage of disease but definitely should be initiated before the CD4 count drops to less than 200 cells/ μ L. In November 2009, the WHO updated the recommendation for ARV therapy for adults and adolescents. CD4 counts are also used as a tool to monitor disease progression and the effectiveness of ARV therapy. When a patient is not responding to treatment, CD4 data are used to determine whether to change from first-line to second-line therapy. CD4 testing is

a critical laboratory component of HIV and AIDS care and treatment, and the demand for CD4 testing is increasing as more patients are living longer.

Portable Tests

Portable tests for HIV monitoring comprise CD4+ T-cell count assays (Immunological monitoring) and HIV quantification assays (Virological monitoring). Currently, portable CD4+ T-cell counters (Flow Cytometry) are available commercially, which used to monitor CD4+ T-cell count and thereby determine when to initiate ARV therapy. These cell counters are fully automated and use $\leq 25 \mu\text{L}$ of blood and provide same-day results, and some provide results in less than 30 minutes.

***Note:** Immunological monitoring refers the CD4 T lymphocyte count which is the hallmark of body's Immune status. CD4 T lymphocyte count also provides the information either to initiate the ARV or not and impact of ARV. Virological monitoring is useful tool for monitoring the disease progression, efficiency of treatment and predicting emergence of resistance in HIV against antiretroviral drugs.*

Quality Assurance

It is a systematic process to monitor and improve clinical laboratory practices. The fundamental components of a laboratory quality assurance program include providing a functional and safe laboratory environment, trained and competent personnel, maintained equipment, adequate supplies and reagents, testing of appropriate specimens, internal monitoring of quality, accurate reporting, and external quality assessments. These components are necessary to provide accurate and precise CD4 T-cell counts, an essential test to evaluate start of and monitor effectiveness of ARV therapy for PLHIV.

Laboratory Environment

The environment in which CD4 testing is performed must be conducive to efficient operations that do not compromise the safety of the staff or the quality of the testing process. Most CD4 instruments and assays require well-controlled environmental conditions to ensure optimal operation and accurate test results. Climate control, such as air conditioning, may be necessary to maintain the temperature and humidity within ranges considered acceptable for the CD4 testing platform in use. Improper climate conditions can affect the specimen testing process, reagent quality, and instrument performance and longevity. A temperature monitoring program in which daily temperatures are recorded and reviewed is necessary to ensure not only proper conditions for CD4 testing but also for reagent and supply storage.

Consistent and stable sources of power are required for most CD4 instruments and assays. Uninterruptible power supply units and backup generators should be in place to provide for continuous testing during power interruptions and outages. Power interruptions that cause failures of a testing run result in costly loss of reagents and preparation time. Unstable power supplies can damage or compromise the components of the CD4 instruments.

Adequate and logically organized space should be available for all aspects of the testing process: specimen processing, test setup, CD4 instruments, data recording, and reporting of results and for designated storage spaces for documents, records, reagents, and supplies. The space should be clean and uncluttered, with only essential equipment, documents, supplies, and reagents readily available at the workbench. Clean water is required for hand washing and maintaining a sanitary workplace.

Human Resources

An appropriately trained and well-organized laboratory staff is essential for the successful operation of a CD4 testing facility. The required qualifications for laboratory personnel performing CD4 testing should be determined by country's governing body in charge of regulating health care professionals and medical technologists. The qualifications of the laboratory staff must be adequate to perform, interpret, and troubleshoot the CD4 assay.

After instrumentation and reagents are available in the laboratory and before performing CD4 testing on patient specimens, laboratory personnel must be well trained and qualified to perform CD4 testing and routine maintenance for the specific instrument in use. The competency of laboratory personnel should be assessed after initial training, and personnel should be approved for testing and instrument maintenance before performing the CD4 assay on patient specimens. Most laboratory bodies recommend that competency is re-assessed annually or when procedures change. Competency assessments should be documented and maintained.

Laboratory Safety Practices

In addition to training specific for CD4 testing, all laboratory staff should be trained in general laboratory safety procedures that have been established for the testing facility. The training should include laboratory safety practices, handling blood-borne pathogens, biohazard disposal and waste management, and fire safety. In addition, the following safety practices should always be adhered to during work performed in the laboratory: (1) wear laboratory coats and gloves when collecting, processing and analyzing samples, (2) never pipette by mouth; instead use safety pipetting devices, (3) handle specimens with care and open blood tubes carefully to avoid aerosols and splatters, (4) after working with specimens and before leaving the laboratory, remove gloves and wash hands with soap and water, (5) disinfect the CD4 instrument as recommended by the manufacturer, (6) disinfect the work area at the start and end of the day, (7) disinfect the work area periodically throughout the day and as needed for spills, and (8) properly dispose of specimen and waste generated from testing.

Reagent Storage

Reagents should be labeled with date of receipt and expiration date and used in order of receipt, with special awareness of reagents with short expiration dates. Ideally, a CD4 instrument or assay should use reagents that do not need cold-chain distribution and storage. However, if cold-chain is required, all reagents must be stored at stated temperatures and the temperatures of refrigerators and freezers should be monitored and recorded daily. If temperatures are found to be out of range, the quality of any unexpired reagents stored at the suboptimal temperatures must be validated with quality control materials before testing patient specimens.

Collection of Whole Blood Specimens

Whole blood specimens for CD4 testing are collected with a vacuum blood-drawing tube containing the anticoagulant EDTA. The tube containing EDTA should not be used after the expiration date. To prevent rapid clotting, the blood specimens are best collected by being directly drawn into the EDTA tube. Blood collection with a syringe is acceptable in patients and infants in whom specimens are particularly difficult to obtain. If a syringe is used, whole blood must be immediately placed in the EDTA tube to avoid clotting. The appropriate volume of blood must be added to the tube to mix properly with the anticoagulant. After collection, the tube should be gently inverted to mix the blood and anticoagulant. The smaller tubes specifically developed for pediatric patients should be used to obtain whole blood specimens from children, especially when collecting from infants by using finger sticks. Pediatric collections are more prone to clotting, so the blood must be mixed with the anticoagulant in the tube as soon as it is drawn. All tubes should be labeled immediately after collection with at least two patient identifiers and the date and time of collection. The date and time of collection and the collector's initials should also be written on the request form. Information on the tubes and request form must match and be verified before sending the tubes to the laboratory and at reception at the laboratory.

Short-Term Storage of Whole Blood Specimens

To avoid the rejection or discarding of patient samples, specimens should not be collected if they cannot be processed or tested within the time required by the specific testing procedure (usually within 48 hours, but may be longer if blood stabilizers are included in the tube). Whole blood specimens collected in EDTA tubes should be held at ambient temperature, but always less than 30°C. If necessary, the specimens can be kept in an insulated cool box with spacers to ensure that the specimens are not kept too cold and do not come in contact with the cool packs. The specimens must not be refrigerated or frozen, and the stopper on the tube should not be removed until immediately before testing.

Note: Serum and plasma can be stored in Cryovials at 2-8°C for up to seven days. Cryovials should be kept in partitioned freezer box for storage. Freezer box with serum specimens should be transported in cold box with ice packs. For longer storage, it should be stored at (-20)°C.

Specimen Collection and Transport

Proper specimen collection, temperature of storage and transport, and timing of testing after collection are critical to ensure the quality of the specimen and the accuracy of CD4 test results. Errors in patient identification and in the materials and procedures used to collect blood can lead to specimen rejection or inaccurate test results. For appropriate specimen collection and handling, laboratory staff must follow standardized specimen collection and safety procedures and undergo appropriate primary and refresher training.

Specimen Labeling

The specimen and patient should be positively identified by ensuring that the information on the specimen matches that on the request form or patient records. The request form should include patient identifiers, including age and sex of patient, name of submitting health care facility, laboratory tests ordered, collector initials, and date and time of collection. A misidentified or mislabeled specimen should not be tested, and the cause of misidentification should be determined so that corrective actions can be implemented to prevent future problems.

Specimen Transport

A reliable specimen transport system, either a commercial courier or dedicated delivery service, must deliver the blood specimens to the testing laboratory within the time limits required by the CD4 assay in use (preferably within 24 to 48 hours). The specimens should be packed in spill-proof, insulated cool boxes with cool packs and spacers. Specimens must not be exposed to extreme conditions because temperatures higher than 37°C could destroy cells and affect test results. The effects of cold (4°C) and hot (>30°C) temperatures decrease CD4 values because of significant losses of the CD4 markers on T cells.

In addition, specimens must be properly packed and transported to minimize shaking.

Standard Operating Procedures on proper labeling, handling, and transport of the blood specimens are to be in place to ensure that the correct specimen is tested, the quality of specimen is optimal, and to provide a safe environment for collectors, transport personnel, and laboratory staff. Procedures and transport logs should be developed to clearly describe how to ship specimens and test results between the collection and the testing facilities. Transporters or couriers should be trained on specimen transport bio-safety and be made aware of the need to transport specimens within a proper time to the testing facility.

Commercial shipping of infectious materials from the collection facility to testing locations is subject to national and international regulations. Blood specimens, including from patients infected with HIV, are classified as United Nations (UN) No. 3373 Dangerous Goods, Biological Substances, category B. National requirements for transportation of infectious, dangerous goods should adhere to international regulations such as the International Air Transport Association (IATA) Packing Instruction 650. National transportation regulations should be updated regularly according to IATA infectious substances shipping guidelines that are issued every year. For proper labeling, packaging, and transportation of HIV-infected material in each country, protocols should adhere to local postal and courier service regulations for mailing a UN 3373 classified agent according to the current IATA guidance document.

Quality Control Sample Results

Quality control materials must be tested daily whenever CD4 testing is performed. Although commercial quality control materials have set CD4 ranges, each testing facility should establish its in-laboratory ranges for low and normal CD4 controls. To establish in-laboratory ranges, at least 20 measurements of each level of the quality control materials should be performed over a period of time. The mean values and standard deviations (SD) should be calculated and the coefficient of variation percentage plus historical coefficient of variation percentages used

to establish new ranges. Once these values have been obtained, Levey-Jennings charts should be created for each control; charts should show the mean values surrounded by ± 1 , ± 2 , and ± 3 SD.

Each day of testing patient specimens, quality control results should be entered on the charts, and, ideally, results for each control should fall within ± 2 SD from the mean established in each laboratory. Patient results should not be reported if control values are more than ± 2 SD from the mean. In addition, the data plotted on the charts should be reviewed for additional signs of unsatisfactory performance. These include results always falling on the same side of the mean indicating that maybe the assay has shifted up or down. Also when results cross from perhaps $-2SD$ to $+2SD$ showing a significant shift of the assay. Levey-Jennings charts should be reviewed monthly to check for and follow up on abnormal trends. Most important, in addition to not reporting patient results if the quality control results are out of range, all occurrences of abnormal quality control results must be documented, with corrective and preventive action performed and documented as necessary.

11.7 Game (Time: 30 minutes)

- Catch the Partner

Objective: To improve the experience of the importance of eye contact.

This is a fun game. All participants stand in pairs in a double circle, one in front of the other. Everybody looks at the facilitator who stands in the center of the circle. The facilitator tries to catch a partner from the inner circle by eye-contact and blinking. Those who received a blinking should run away from their partner behind and join a new partner. The partner however tries to keep him because, if S/he loses him, S/he is alone and has to go into the center to catch another partner.

11.8 Standard Operating Procedure for Tools and Techniques (Time: 30 minutes)

The SOP should be developed for instrument use and maintenance at each level of laboratory according to the manufacturer's protocol, with adaptations based on the specific situation in the testing facility, but any adaptations made should not alter any of the manufacturer's instructions. The SOP should be available, understandable, and followed by laboratory personnel to ensure standardization of practice and to reduce instrument downtime, testing variations, and errors. The SOP provide not only methods on how to use and maintain an instrument but also procedures on general troubleshooting, guides to other manuals and tools for advance troubleshooting, and information on how to place service calls. Each laboratory must have a plan to perform, implement, and document scheduled and as-needed maintenance. Laboratory personnel must be able to perform simple troubleshooting procedures and be informed of procedures to notify service providers for scheduled preventive maintenance and of instrument or equipment failures.

Daily Maintenance

Performance of daily maintenance procedures is essential to ensuring that the instrument is working properly and any potential downtime is reduced. Performance of the required procedures should be documented on a form that is part of the maintenance SOP to ensure that all steps are performed with each use of the instrument. Free-flowing fluidics of a flow cytometer is vital to obtaining accurate test results. Whole blood specimens used in CD4 assays have a tendency to clog or partially block the tubing of the instrument. It is recommended that cleaning of the instrument be performed before starting CD4 testing, at the end of the test day, and periodically during the day, depending on the workload. All cleaning should be performed strictly according to the instrument manufacturer's instructions. There should be daily maintenance of the PCR instruments having self-contained reagent cartridge that are self cleaning. In addition, daily maintenance should be performed even on days when testing is not done to prevent deposits from accumulating in the tubing.

As with daily maintenance, performance of scheduled and as-needed maintenance procedures is necessary to ensure that the instrument is working properly and downtime is reduced. A maintenance log need to be scheduled

and as-needed maintenance should be developed to ensure that all maintenance procedures are performed and documented. In addition, a calendar should be developed to ensure that all scheduled maintenance is performed when required. If engineers from the manufacturer or supplier visit to perform maintenance or to correct a problem, they should provide with documentation of what they did, and this documentation should be kept in the instrument file.

Troubleshooting

Testing failures or instrument malfunctions may occur during routine use of the CD4 instrument. Troubleshooting these failures or malfunctions is necessary before CD4 testing can continue and any patient results reported. A corrective and preventive action log sheet should be developed to record any problems and error messages that occur during or outside CD4 testing. The corrective action taken to resolve the problem, including advice or service calls from the manufacturer, should be documented as well as the preventive action to be taken for the future. This log should be reviewed periodically to check for trends, and any technical errors that are identified should be immediately addressed. In addition, plans should be made to provide for testing during periods when a primary instrument is not functioning. Potential approaches for backup CD4 testing include having a backup instrument on hand and referring specimens to another laboratory until the primary instrument is back online. All quality systems still apply for backup instruments and laboratories and concerned people are responsible for checking and confirming the quality of any backup systems.

Use of SOPs

SOPs are critical for maintaining consistent testing performance and reducing errors associated with variation in testing. Each testing facility must have up-to-date and practical SOPs for all laboratory activities to ensure the consistency, quality, and integrity of the generated data. Each laboratory should have SOPs to cover the entire process from sample collection through testing, reporting and archiving. These should include specimen collection, specimen transport, specimen reception and processing, quality control, CD4 testing, instrument and equipment maintenance, results reporting, specimen destruction or archival and external quality assurance. To maintain the quality of testing, current SOPs must be readily available in the work areas and accessible to all testing personnel. Laboratory managers, supervisors, and testing personnel must understand and review the SOPs annually. SOPs must be accurate and relevant, and all laboratory personnel must strictly follow the SOPs during the testing process. Any updates to the SOPs must be approved by management and provided to testing personnel. SOPs no longer in use or replaced by newer versions should be removed from the testing site and archived.

Quality Control

Daily testing of quality control samples with established target values and acceptable ranges must be done at each CD4 testing laboratory to ensure the quality of CD4 results on patient specimens. The results from daily control sample testing will identify abnormal trends and problems with the instruments and reagents, so that problems can be addressed or corrected as soon as possible and that patient results are only released when quality of the testing is confirmed. Each testing facility should analyze at least two quality control samples, one with low CD4 values and another with normal values. A low-level quality control sample is needed to determine whether an instrument or assay can accurately report low-level CD4 counts in patient specimens. A normal-level control will represent the CD4 range likely to be seen in uninfected or asymptomatic people. In addition to being tested each day that CD4 testing is performed, quality control materials must also be tested after any maintenance or troubleshooting has been performed on the instrument. Not all quality control materials can be used on all instruments, so quality control materials should be selected on the basis of compatibility with the equipment in use in the testing laboratory.

Incident Management

A quality management system, with a well-defined SOP, is necessary to identify and correct any errors or variations that affect the quality of the CD4 tests. This system should include a means of reporting any incident that could

change the results obtained in the testing procedure. Corrective and preventive actions for each incident should also be documented and reviewed on a regular basis to fix any errors or trends.

Review of Documents

A system should be established in the laboratory to retain all logs, records, source documents and reports for a predetermined period. These documents should undergo supervisory review on a regular basis and are an excellent means of identifying potential problems. These documents may include specimen log book or electronic spreadsheet, quality control results, source assay records and print outs, equipment maintenance and service records, incident reports, and personnel records.

11.9 Ethical Principles adopted during Data Collection Period (Time: 60 minutes)

Facilitator should ask “what is ethics?”

Ethics in Health Research in general is related with professional responsibility and moral value for protecting human rights and social justice. Types of behavior related to morality, social justice, human rights, and social as well as professional responsibility.

Medical ethics talk about to protect the patients, while research ethics talk about to protect the study participants. The word ethics originated from the word “ethos”, which means character. It is a behavior related to customs and moral values of the people. It is a way of characterizing actions with regard to human dignity.

Facilitator should ask “what are the ethical principles?”

All research involving human participants should be conducted in accordance with four basic ethical principles, namely

- Respect for the dignity of person
- Beneficence (non-maleficence)
- Justice
- Respect for the environment

Respect for the Dignity of Person: We should respect for the autonomy of persons. It is essential to promote the essential freedom in decision making attributable to persons based on their moral and rational dignity and their capacity for self-determination. There should be the active protection of persons, which is required for those who are dependent or vulnerable be affordable security against harm or abuse. It also means that in research we should do nothing to disrespect the person in the study such as breaching their confidentiality or making others aware of any of their personnel information.

Beneficence: It is researcher’s duty to maximize possible benefits and to minimize possible harms and wrongs. Study participant should be safeguarded against possible harms (psychological and physiological) and abuses (stigmatization).

Justice: It requires that persons in similar circumstances be treated alike and that differences between persons due to circumstances be acknowledged and addressed. It also requires the equitable distribution of the burdens and benefits of research. Special provisions must be made for the protection of the rights and welfare of all persons in vulnerable situations.

Respect for Environment: Research needs to ensure the proper and safe disposal of biologically hazardous waste from laboratory, clinical or field research. The cultural, including religious and linguistic, heritage of communities and persons need to be safeguarded. Research should not damage or degrade the natural environment.

Facilitator should ask “what is Informed Consent, and its features?”

It means that you tell the person enough about the nature of the research study for them to make a proper (informed) decision about whether or not to take part. Research study team should not pressure, coerce or deceive

respondents to ensure their participation. The study team should also try to ensure that participants are not pressured by their family or community members.

Informed consent is much more than just a form. It is a process that continues throughout research to ensure that the participants have all the information about their study participation. This process requires several steps before the participant actually agrees and signs the consent form (or makes their mark if they are illiterate). Informed consent is not only a legal requirement, it is a communication process between the research team and the participant that starts before the research is initiated and continues throughout the study. It is essential that the information provided is understood by the potential participant and empowers that person to make a voluntary decision about whether or not to participate in the study.

During the informed consent process, participants must be given enough opportunity to raise their questions, concerns and queries and have these responded to adequately before deciding to participate in the research study. This information is usually provided in an information sheet, which the person obtaining the consent can give the participant or can read to them. The consent form should be written in simple language to be sure that the study participant can easily understand the information. Informed consent must contain all elements required by relevant international and national standards including Good Clinical Practice. When conducted correctly, informed consent protects an individual's freedom of choice and respects their autonomy.

Information included in the Informed Consent (as applicable to study design):

- a. The nature of the research study (for example, who is conducting the study, purpose of the study, target population, number of participants required in the study, time that each participant will be in the study, details of the study procedures and interventions, type of questions, etc.),
- b. Research participant selection method (randomization or other methods),
- c. Trial treatment (open leveled, single or double blinding, etc) including informing the participants that they may receive placebo or actual drugs,
- d. Participants' responsibility to help the research study as prescribed by the investigating team once agreed to participate,
- e. The potential risks/discomfort and benefits from participating in the study,
- f. Provision of payment or compensation of their time and travel,
- g. Provision of a data safety and monitoring board, and the contact information name of the person or people involved,
- h. The frequency and timing of data collection,
- i. How their clinical and physical examination related data (once obtained) will be provided to them,
- j. How their privacy will be protected (names or addresses are not written),
- k. Participation is voluntary,
- l. Participants have the right to refuse to answer any questions or stop the interview at any time, especially as they may find some of the questions sensitive,
- m. How could they withdraw from the study once informed consent and data has been obtained?,
- n. The collected data will be utilized only for the specific study, not at all for other purposes,
- o. The duration of data storage,
- p. Compensation for study related injury/adverse events (if any, applicable especially in the case of drug/vaccine trial) to be occurred during the study period,
- q. Provision of providing health care or treatment or counseling (if required) once the participants has been enrolled in the research study,
- r. Whom to contact for further information, and
- s. Explanation of situations where the study or their participation might end early. The participant involved must have the legal capacity to give consent.

Features of Informed Consent

- Informed consent should be prepared in a language understandable by the participant. If there are illiterate participants, literate people will read the informed consent for him/her.
- Study title along with its main purpose/aims/general objective of the research study need to be mentioned. It is also essential to include who is doing the study, how can the study participant join, what will researcher do, what about the alternatives to participation etc.
- Information provided in understandable language about the procedure to be adopted in the study, and the potential risks, discomfort and benefits involved.
- If significant time commitment will be required, study team should compensate for time in the form of a small payment for participation.
- Participation should be voluntary, which means participants are free to choose whether to join the study.
- The study team should explain under what circumstances participants will be compensated for study-related injury.
- Special attention needs to be given while taking consent from a vulnerable person. This requires a witness and a legal representative.
- While taking consent from a child/adolescent (aged seven but below 18 years), to the extent possible, assent must be obtained in addition to their legal guardian giving proxy consent for their participation.
- Sometime written consent might not be needed or appropriate for people who are literate and competent, for example, verbal consent from sex workers in a bar where having them sign a consent document would draw attention to them.
- Confidentially and anonymity should be maintained.
- The consent form should contain a statement such as “I have been given an opportunity to ask questions concerning the procedures to be used in this study and I have had all my questions answered. I understand if I have further questions concerning the research conducted, I may contact the study team at any time”. I also understand that I may leave the study at any time if I want to and there will be no penalty for me”.
- There should be a space for signature or thumb print by the participant and one of the study team member. Third party as witness might be required if the participant is illiterate.

Documenting Informed Consent

The documentation process starts with the consent form being signed by the research participant or his/her witness or both, and one of the study team members. Signatures on the consent form verify that the participant has understood the process and has voluntarily agreed to participate. In the case that the signature is not possible, the participant may be asked to give a thumbprint or make a mark as evidence that he or she received the information and agreed to participate in the study. However, a signature does not necessarily mean that the participant has understood and given voluntary consent. The Declaration of Helsinki indicates that “after ensuring that the participant has understood the information, the physician should then obtain the participant’s freely given informed consent, preferably in writing”. Sometime the name of the participant does not necessary need to be recorded, but it has to be mentioned in the coded form.

It is important to realize that the need for documentation will vary according to the specifics and the setting of the research. For some type of research – Low-risk survey research, anonymous survey methods, stored tissue research, or retrospective analysis – some of the elements may not apply or may not require the participant’s signature, and in some locations, participants may be uncomfortable signing forms. In such cases, the ERB/IRC responsible for the study determines and approves the method of documenting some or all of the required elements, or not documenting, informed consent.

Note: Waiver of informed consent could also be considered during conditions of emergency. However, this would be permissible only if ERB/IRC has already approved the study or use of the drug and its use in life threatening conditions. However, the patient or the legal guardian should be informed after she/he regains consciousness or is able to understand the study.

There are four criteria for allowing a waiver:

- Research should involve no more than minimal risk to the participant.
- A waiver will not adversely affect the rights and welfare of the participants.
- The research cannot be conducted without the waiver and it is not possible to obtain the consent of the participant, e.g. testing on patient samples when the patient has already died.
- When appropriate, the participants will receive additional pertinent information after their participation ends.

Note: *Some time written consent from some specific population like sex workers in a bar would not be possible, so in that circumstances, where having them sign a consent document would draw attention to them, verbal consent would be appropriate, wherein researcher explains about the purpose of the study, and informs them how important their responses are. After ensuring them absolute privacy and confidentiality, researcher may take their verbal consent, which is only possible after obtaining ERB approval.*

Maximizing Participation

Although consent must be voluntary, we want to try and maximize participation to reduce bias. Methods include keeping interviews as short as possible, and conduct fieldwork at times that are convenient to the participants. Reducing refusals is important because those who refuse to be interviewed may be different from those who participate, and if there are lots of refusals, our sample may not be like the population of interest and may be biased. We need to facilitate participation, but without being coercive.

Note: *Response rates should always be reported in the analysis. Participation bias should be assessed and taken into consideration in the analysis. It is necessary to record the person who will refuse during interviewing process, their reason for refusing and basic socio-demographic information about them. Often when refusal rates are high, these can be traced back to obvious causes such as lack of comfort with the interviewer, perceived stigma from being identified as someone eligible for HIV research and other factors. Use of peer educators to administer informed consent is one possible solution to some of these.*

Using Incentives

Incentives can consist of cash payments for participation or small gifts, or Information, Education and Communication (IEC) materials, such as T-shirts or Cap. In general, incentives are considered appropriate for compensating or thanking study participants for time away from work and out-of-pocket expenses, such as transportation. However, higher payments may jeopardize the voluntary nature of informed consent. They can create a situation where an individual's decision to participate is unduly influenced by money or gifts.

Additionally, using incentives may result in a sample that is not like the population of interest because the sample is biased towards those who have a greater need for the incentive. This needs to be balanced against the fact that not using incentives may cause the sample to be biased towards those who are more cooperative. Any incentive provided must receive approval from the local IRC as well as any national authorities if applicable.

Note: *Respondent-driven sampling provides incentives to participants to recruit additional members of the high-risk population to the study. These incentives can be considered 'payment' to the participant, who in their role as recruiters acts as fieldworkers. This part of the methodology may be controversial in some settings, and may require explanation to the ERB/IRC reviewing and overseeing the study.*

Confidentiality

Confidentiality protects participants from adverse consequences that may arise from other people knowing that they participated or their responses. For example, if information about a person's sexual preference is disclosed, he or she may suffer discrimination, stigma or even be subject to criminal charges. Potential threats to confidentiality, as well as measures taken to minimize them, should be discussed with the participants as part of the informed consent process.

The main ways to ensure confidentiality include:

- Ensure names or other means of identification are not recorded on surveys.
- Store data safely and appropriately, and ensure restricted access to only those that need the information.
- Train fieldworkers on the importance of confidentiality.
- Have clear disciplinary procedures for staff who breach confidentiality.
- Identify problems and possible solutions related to confidentiality.

Ways to Protect Confidentiality

Ways to protect confidentiality include finding a private place to conduct interviews and stopping other persons or gatekeepers from being present during the interview. The presence of other people breaches confidentiality and may cause the respondent embarrassment and influence some of his/her answers. In such cases, the interviewer can explain to the respondents that some questions are confidential and ask them to suggest a place where you are unlikely to be disturbed. Sometimes, field workers hear stories during interviews that make them so sad that they need to talk about it. Field worker training should stress that.

Vulnerable Population

Those who cannot protect sovereignty are basically termed as vulnerable population such as disease/condition mentally ill (mentally impaired), children and old people, HIV high-risk groups, PLHIV, FSWs, MSM, PWIDs, uneducated poor, pregnant mothers, tribal, uniform service people (military, armed-force, police, etc), and prisoners. These group need to be taken into special consideration as they need special protection. We need to provide specific justification if we are going to include these sort of vulnerable population. Proxy consent (third party will provide the consent on behalf of the study participant) might be needed in some instances such as children, mentally ill patients, etc.

Working with HIV High-risk Groups

Some high-risk groups such as MSM, CSWs, FSWs and PWIDs may appear in illegal or stigmatized behavior. If high-risk group members fear that information about their behavior may be used against them, they may refuse to participate in the study process. So, great care should be taken into consideration while dealing with such participants. These groups need to be ensured fully during informed consent process and told them absolute confidentiality.

It is important to keep following things while undergone for the process of informed consent.

- The interview is as long as it needs to be to ensure adequate consent. If the place is private, time does not matter.
- Remunerate lost earnings (if any) in the form of reasonable incentive but one which is not coercive.
- Explain the risk and benefits during informed consent procedure.

With regards to HIV and AIDS related study, we need to mention following indirect benefits.

- Improve HIV prevention and care programs,
- Raise public awareness of burden of HIV and AIDS in the population,
- Reduce stigma and contributing towards social settings,
- Give feedback of results to the community at a population but never an individual level, and
- Provide prevention care services as needed.

Note: Language, social perspective, and taboos surrounding homosexual activity exist in many societies of Nepal. In some instances, laws that are prohibiting homosexual activity, drug injection, sex with FSWs, and related stuffs may raise some negative consequences within the community settings. Due to which our target population may not come upfront to participate in a study, thereby affecting the completeness of study and the quality of the data. So, great care should be taken into this direction with the inclusion of high level confidentiality and anonymity.

Explaining these issues to them is part of the informed consent process. Steps that can be taken to minimize threats to confidentiality may include:

- Handle MSM/FSWs/PWIDs/PLHIV anonymously
- Interviews in private settings
- Keeping study documents in a locked, limited-access room
- Having all study team including field staffs sign confidentiality forms and undergo training in research ethics.

If people fear that information about their behavior or their HIV status will be used against them, they may avoid HIV testing or provide inaccurate personal information. If a person's HIV infection or their sexual preference becomes known, he or she may suffer discrimination or stigma, or even be subject to criminal charges in some situations. We should be aware of any particular provisions in laws that may complicate participation, and must maintain the confidentiality of each individual's records to guard against inadvertent disclosure. For confidentiality of the case, client code should be used in case reporting.

In unlinked anonymous approach, informed consent is not needed from the ante-natal care women whose blood will be tested for HIV. In unlinked anonymous testing, a sample of blood originally collected for other purposes is tested for HIV after all information that could identify the source of the blood is eliminated from the sample.

MODULE 12

Sampling Techniques and Sample Size Calculation

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Define meaning of sampling and its importance,
- (b) Illustrate steps in sampling,
- (c) Identify and define the population to be studied,
- (d) Identify and describe the common methods of sampling,
- (e) List the factors to consider when deciding on sample size and
- (f) Illustrate the methods for calculating sample size for simple descriptive study.

Time Frame: 180 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Assessment/Presentation and Discussion

Course Contents

- a. Meaning of Sampling and its Rationale
- b. Steps in Sampling
- c. Types of Sampling Methods/Techniques
- d. Sample Size Calculation

Game

- The Rainstorm

12.1 Meaning of Sampling and its Rationale (Time: 5 minutes)

Facilitator should ask “why do we need to think about sampling?”

In order to obtain maximum information about the characteristics of population under the investigation with least sacrifice of money, time and human resource, and obtain the best estimate values of the population parameters, we need to think about sampling, OR when it is practically not possible to include all units of the population for investigation, then we do sampling.

Facilitator should ask “what is sampling?”

Sampling is a process of systematically selecting cases for inclusion in a research project. It involves the selection of a number of study units from a defined study population. The population consists of a number of units (elements) usually very large and sometimes infinitely. In many cases, it is practically not possible to include all units of the population for investigation. Therefore, a few of the population units are selected as a representative of the whole population. The selected units are called sample and the method of selecting the sample is called sampling technique.

12.2 Steps in Sampling (Time: 15 minutes)

1. Defining the population to be covered (Target population),
2. Defining sampling units,
3. Acquiring sampling frame / list of the population elements (if possible),
4. Selection of the sampling method,
5. Deciding about the size of the sample,
6. Specifying the sampling plan, and
7. Selecting the sample

Population: It has to be defined in conjunction with the purpose of the study: population is defined in terms of

- Content (for example: all persons)
- Units (for example: family units)
- Extend (for example: the area covered)
- Time (for example: the calendar year)

Apart from persons, a study population may consist of villagers, institutions, records, etc.

Target Population: It refers to the specific pool of cases that researchers want to study.

Sampling Ratio: It is the ratio of the size of the sample to the size of the target population. For example, the population has 50,000 people, and a researcher draws a sample of 500 from it. Researchers sampling ratio is $500/50,000$ or 1:100 or 0.01 or one percent.

Sampling Frame/List: A researcher operationalizes a population by developing a specific list that closely approximates all the elements in the population. The list is researchers sampling frame. In other words, it is the list of population units from which the sample units are to be selected. The list is sometimes called a sampling frame. If a list is not available, it should be prepared before conduction of the main survey. Researcher can choose from many types of sampling frames: telephone directories, tax records, driver's license records, and so on. A good sampling frame is crucial for good sampling:

Qualities of Sampling Frame:

1. It should be exhaustive i.e. all population units must be included in the list.
2. It should be up to date: It must include latest additions to the population (Births, Immigration, etc.)
3. The list should contain full information about the units so that an appropriate sample design may be planned.
4. The unit must not be repeated in the list.
5. The list should be suitable for the unit of the study.
6. The list must be reliable. It must be maintained by an authority that can be relied upon.

Population parameter: It is the true characteristic of the entire population, so parameters are determined when all elements in a population are measured. Researchers use information from the sample to estimate population parameters. Population characteristic or population parameters such as the percentage of city male residents who believe in going FSWs, the average age of all girls come forward for sex trade in urban area, etc.

Sampling units: The population units selected as sample are called sample units.

Types of sampling units:

1. Geographical units: ecological regions, districts, cities, municipalities, VDCs, wards etc.
2. Structural units: a house, a flat etc.
3. Social group units: a family, a school etc.
4. Individuals: persons

How to test the reliability of sample? The sample selected must be reliable and representative. If researchers want to draw conclusions that are valid for the whole study population, they should take care to draw a sample in such a way that is representative of that population. A representative sample has all the important characteristics of the population from which it is drawn.

12.3 Types of Sampling Methods/Techniques (Time: 70 minutes)

There are several methods of selecting population units to be included in the sample. These methods are however can be grouped into two classes:

1. Non-Probability Sampling Method (Non Random Sampling Method)
2. Probability Sampling Method (Random Sampling Method)

1. Non-Probability Sampling Method:

If a sampling frame is not available, non-probability sampling methods can be used. With these methods, each study unit has not an equal chance (probability) of being selected in the sampling. Non-probability sampling procedures are not valid for obtaining a sample that is truly representative of a larger population. Almost always, non-probability samples tend to over-select some population elements and under-select others. The non-probability sampling can be done by following methods.

(i) Convenience or Haphazard Sampling: It is a method in which for convenience sake the study units that happen to be available at the time of data collection are selected in the sample. This method is to be used when (a) Population is not clearly defined, (b) Sampling units are not clear, and (c) A complete source list is not available.

When a researcher haphazardly selects cases that are convenient, researcher can easily get a sample that seriously misrepresents the population. That means some units may be over-selected, other under selected or missed altogether. So haphazard sampling can produce ineffective, highly unrepresentative samples and is not recommended. The only positive thing about such samples is that they are cheap and quick.

For Examples:

The person-on-the-street interview conducted by television programs is an example of a haphazard sample. Television interviewers go out on the street with camera and microphone to talk to a few people who are convenient to interview.

A researcher wants to study the attitudes of villagers toward HIV/AIDS. S/he decides to interview all adult patients who visit the out-patient clinic during one particular day. This is more convenient than taking a random sample of people in the village, and it gives a useful first impression.

(ii) Quota Sampling: It is a method that ensures a certain number of sample units from different categories with specific characteristics appear in the sample so that all these characteristics are represented. It is an improvement over convenience sampling, and it is useful when researchers feel that a convenience sample would not provide the desired balance of study units. In quota sampling, a researcher first identifies categories of people (e.g. male and female, or urban and rural), then researcher decides how many to get in each category. Thus the number of people; in various categories of the sample is fixed. Once the quota sampler fixes the categories and number of cases in each category, researcher uses convenience sampling.

There two types of quota sampling: proportional and non-proportional. In proportional quota sampling the major characteristics of the population are represented in the sample by sampling a proportional amount of each.

For example,

If you know the ratio of injecting drug users between men and women who come for methadone treatment at a clinic is three to one and researcher want to use quota sampling with the same ratio for an interview of the sample size of 80 drug users. The researcher will sample 20 women and 60 men from the clinic.

Gender is a variable of interest in how people experience HIV infection, a quota sample would seek an equal balance of HIV-positive men and HIV-positive women in a given city, assuming a 1:1 gender ratio in the population.

For non-proportional quota; researcher specifies the minimum number of sampled for each category of the characteristic without concerned of having numbers that match the proportions in the population. This method is typically used to ensure that smaller groups are adequately represented in the sample.

For example,

The researcher of the family planning study suspects that religion might have a strong effect on patients' attitudes toward the family planning services. Researcher is afraid to miss the Muslims, who are a minority in the area. Researcher, therefore, decides to include in the study 50 patients from each of the different religious groups (Hindus, Muslims, Christians and Buddhists) and to extend the study over three or four days to obtain the desired sample.

(iii) Purposive or Judgmental Sampling: In this method, the research deliberately or purposively selects certain units for study from the population. The choice of the selection is supreme and nothing is left to chance. However, a care is taken that selected group or items together would give responses nearly as possible in the same average or proportions as in the totality with respect of those characteristics, which are already a matter of statistical knowledge.

Purposive sampling is appropriate in three situations: (a) A researcher uses it to select unique cases that are especially informative, (b) A researcher may use purposive sampling to select members of a difficult to reach, specialized population. For example, researcher wants to study sex workers. It is impossible to list all sex workers and sample randomly from the list. Instead, researcher uses subjective information (e.g. locations where sex workers solicit, social groups with whom sex workers associate) and experts (e.g. police who work on vice units, other sex workers, pimps) to identify a "sample" of sex workers for inclusion in his/her research study. Researcher may use many different methods to identify the cases, but the goal is to locate as many cases as possible, and (c) Another situation for purposive sampling occurs when a researcher wants to identify particular types of cases for in-depth investigation.

(iv) Snowball Sampling: This is a method for identifying and "sampling" or selecting the cases in a network. This is also termed as chain referral sampling. It is based on an analogy to a snowball, which begins small but becomes larger as it is rolled on wet snow and picks up additional snow. Snowball sampling is a multistage technique. It begins with one or a few people or cases and spreads out on the basis of links to the initial cases. The network could be people in a college who have had sexual relations with each other, teenagers' friendship networks in a community. So, it is often used to find and recruit "hidden populations," that is, groups not easily accessible to researchers through other sampling strategies.

For example,

A researcher examines sexual networks among the teenagers in a community know each other. Each names four close friends. The researcher then goes to the four friends, then goes to those four and does the same thing again, and so forth. Before long a large number of people are involved, each person in the sample is directly or indirectly tied to the original teenagers, and several people may have named the same person. The researcher eventually stops, either because no new names are given indicating a closed network, or because the network is so large that it is at the limit of what he/she can study. The "sample" includes those named by at least one other person in the network as being a close friend.

2. Probability Sampling Method:

If a sampling frame does exist, probability sampling methods can be used. With these methods, each study unit has an equal or at least a known probability of being selected in the sample.

The probability sampling can be done by following methods.

(i) Simple Random Sampling: It is the simplest form of probability sampling. In simple random sampling, a researcher develops an accurate sampling frame (listing of all study units), selects the required number of sampling units, using a “lottery” method.

There are two approaches of lottery method. In the first method, the unit of the population selected for the sample is observed and replaced so that in the successive selection, it can again be selected as a fresh unit. This method is called simple random sampling with replacement or unrestricted random sampling. In the second case, the unit selected once is not replaced. This method is called simple random sampling without replacement or restricted random sampling.

For example, a simple random sample of 50 patients is to be selected from a hospital of 200 indoor patients (the universe). Using medical record files (a list of all 200 patients – the sampling frame), each patient is given a number (1 to 200), and these numbers are written on small pieces of paper. All the 200 papers are put in a box, after which the box is shaken vigorously to ensure randomization. Then, 50 papers are taken out of the box and the numbers are recorded. The patients belonging to these numbers will constitute the sample. However, this procedure can be very tedious when drawing large samples.

Simple random sampling is usually reserved for use with relatively small populations with an easy-to-use sampling frame.

(ii) Systematic Sampling: This is a modification of simple random sampling, which is ordinarily less time-consuming and easier to implement. The estimated number of elements in the larger population is divided by the desired sample size, yielding a sampling interval (let us call it n). The sample is then drawn by listing the population elements in an arbitrary order and selecting every n th case, starting with a randomly selected number between 1 and n .

For example,

If there are 2,000 rural health centers in a country and you select a sample of 285 rural health centers, the sampling unit is the rural health center. In this example, your sampling frame would be a list of rural health centers arranged alphabetically by health center name. If your desired sample size is 285 rural health centers drawn from a universe of 2,000 rural health centers, the sampling interval is $2,000/285=7$. You would then choose a randomly selected number between 1 and 7 as your start. If your random number is 3, the first unit selected would be the 3rd rural clinic listed in the sampling frame, the second would be the 10th ($7 + 3$) clinic listed, the third the 17th, and so on until the sampling frame is exhausted.

In most cases a simple random sample and a systematic sample yield virtually equivalent result. Systematic sampling is useful when the units in your sampling frame are not numbered, when the elements are not numbered serially, or when the sampling frame consists of very long lists. One important situation in which systematic sampling cannot be substituted for simple random sampling occurs when the elements in a sample are organized in some kind of cycle or pattern.

(iii) Stratified Random Sampling: Stratified random sampling involves dividing the target population into homogeneous subgroups of characteristics and then taking a simple random sample or systematic sample of a predetermined in each subgroup. Researcher use stratified random sampling if it is important that the sample includes representative groups of study units with specific characteristic (*for example, residents from urban and rural areas, or different age groups*).

Each stratum is treated as a separate population. You arrange your sampling frame by strata, and then draw a random or systematic sample from each. Statistics of interest are estimated for each stratum and then combined to produce the estimation for the total population parameters.

Stratified sampling produces samples that are not only representative of the population, but also subgroups of the population, particularly small minority groups. If the subgroup is very small, different sampling fraction within the different strata to randomly over-sample from the small group can be applied. Stratified random sampling generally have more statistical precision than simple random sampling if the strata are homogeneous. Researchers use stratified sampling when a stratum of interest is a small percentage of a population and simple random sampling could miss the stratum by chance.

For example,

*Rural health centers, urban health centers, and hospitals are very different kinds of establishments in Nepal. Similarly, the proportions of urban and rural residents or of HIV-positive and HIV-negative patients attending prenatal clinics are liable to be very different. To ensure that all relevant strata of the population are represented in your sample, you would use a technique called **stratified random sampling**.*

If the variable of interest is condom use among sex workers and there are types of sex workers; street-based, brothel-based, and home-based. To ensure that all types of sex workers represent in the sample, stratified random sampling should be used for the sampling method. Sex workers are stratified into stratum according to their types (street-based, brothel-based, and home-based), and sample of sex workers are drawn by using simple random sampling or systematic sampling from each strata.

An advantage of stratified sampling is that we can take a relatively large sample from a small group in our study population. This allows us to get a sample that is big enough to enable us to draw valid conclusions about a relatively small group without having to collect an unnecessarily large (and hence expensive) sample of the other, larger groups. However, in doing so, we are using unequal sampling fractions, and it is important to correct for this when generalizing our findings to the whole study population. You can draw either a **proportionate** or **disproportionate** stratified sample. Proportionate stratified samples are perhaps the most commonly used type of stratified sampling.

(iv) Cluster Sampling: First step is to divide population into clusters (groups of study units) and then either measure all study units within the sampled clusters (one-stage cluster sampling) or draws a number of study units from each of the sampled cluster through simple random sampling or systematic random sampling (two-stage cluster sampling). Clusters are often geographic units (e.g. districts, villages) or organizational units (e.g. clinics, training groups).

Examples of clusters include all the AIDS patients in a hospital, all the peer educators in a district, all the women in a town, all the children in a household, and all sex workers in brothels. You would probably use cluster sampling to assess knowledge of the youngsters (15-24 years) on HIV and AIDS. No list of youngsters (15-24 years) exists, but you do have a list of households. Your strategy would be to first select a random sample of households. If the clusters contained a small number of individuals—for example, only one or two youngsters per household—then you might interview all of the individual sampling elements included in the cluster.

Cluster sampling is used when it is not possible to get an adequate sampling frame for the individuals you wish to study, or when a simple random sampling technique would result in a list of individuals so dispersed that it would be too costly to visit each one. The disadvantage of a cluster sample is that it increases sampling error and requires a larger sample size for reliable estimates of population characteristics. If the cost of the larger sample size outweighs the costs associated with unclustered sampling, clustering should not be used. A researcher who uses cluster sampling must decide the numbers of clusters and the number of sample elements within clusters.

For example:

In a study of the knowledge about HIV and AIDS in rural communities of a district 'A', a list is made of all the villages. Using this list, a random sample of villages is chosen and all the youngsters (15-24 years) in the selected villages are interviewed.

- **How to select households from village?** Simply choosing households in the center of the village would produce a biased sample, the following systematic sampling procedure is proposed :
 - Go to the center of the village
 - Chose a direction in a random way: spin a bottle on the ground and choose the direction the bottleneck indicates
 - Walk in the chosen direction and select every third or every fifth household (depending on the size of the village) until you have the required number (say ten) you need. If you reach the boundary of the village and you still do not have ten households, return to the centre of the village, walk in the opposite direction and continue to select your sample in the same way until you have ten. If there is nobody in a chosen household, go again at least for three times. If there is nobody even after visiting for three times, discard it, and indicate it in the note book.
- **How to select sample within household sampling?** Once a researcher samples a household or similar unit (e.g. family or dwelling unit) in cluster/multistage sampling, the question arises, “whom should the researcher choose? Researchers use within household sampling to ensure that after a random household is chosen, the individual within the household is also selected randomly.

Researchers can randomly select a person within a household in several ways. The most common method is to use a selection table specifying who is to be chosen (e.g. oldest male, youngest female) after the size and composition of the household are known.

Some Specific Sampling Techniques used in IBBS

Respondent Driven Sampling: It is a modification of snowball sampling which uses a mathematical model to weight the sample data to compensate for the fact that the sample is not a simple random sample. It is an important method for sampling hard-to-reach groups, including when the groups may be small relative to the general population or when a list (sampling frame) of population members does not exist.

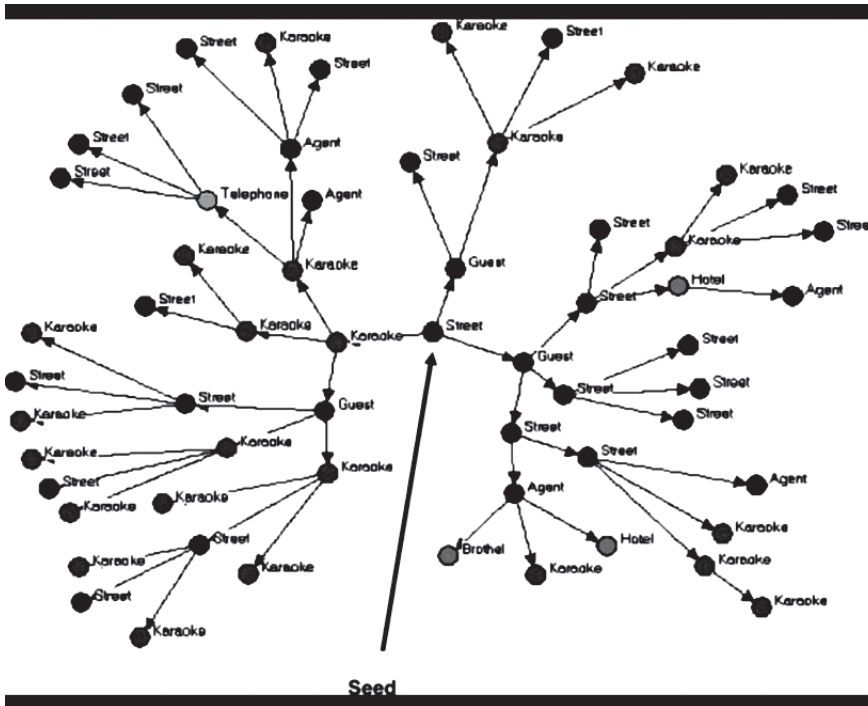
It starts with initial contacts, or seeds (initial survey respondents), who are surveyed and then become recruiters. The number of seeds required varies by the total sample size required and the diversity of the target population. Each of these recruiters are given coupons to use to invite up to three to five eligible people (acquaintances) that he or she knows in the high-risk group to be interviewed. The new recruits who visits the study site bring their coupon that identifies (by number) who referred them to a central place where they are interviewed. No names are provided, just study identification numbers combined to develop a list of the numbers of acquaintances per study participant. The recruits then become recruiters. Each recruiter will be given coupons exactly as previously done and ask them to recruit three to five acquaintances. This may go on for several waves (usually five to six waves). Both the recruits and the recruiters are given incentives to encourage participation.

Theoretically, it should result in a probability sample. Given sufficiently long referral chains (five to six waves), the sample composition becomes stable, regardless of the people you started with, and the final sample will be like the population from which it is recruited.

Computer packages exist to assist in the entry and analysis of response driven sampling data. We need to keep track of (a) the links between recruiters and recruits, so that we can calculate the probability of selection, and (b) the size of each individual’s network, so we can estimate how precisely the population measure is estimated by the sample estimate (to compensate for the fact the subjects are likely to recruit people like themselves and for difference in personal network size).

This method is costly and time-consuming. Sources of significant bias can exist if the population is not well networked. Entire sections of the population of interest can be missed if they are not connected to the initial seeds. Depending on the number of initial seeds, the start-up of a respondent-driven sampling study can be slow. Recent research has found that there is large variation in the estimates produced through respondent-driven sampling.

Large sample sizes should improve on the estimates. There have been mixed results using respondent-driven sampling with different KAPs. In some contexts, the populations were not well networked, making respondent-driven sampling a difficult sampling strategy.



Time Location Sampling: This is a probability-based sampling method that relies on a sampling frame derived from the times when and locations where members of a target population congregate rather than where they live. In order to conduct time–location sampling, all the venues where the population congregates as the primary sampling unit will be listed. It is also termed as “spatial-temporal” sampling.

For example, the population may meet in certain clubs. Specific times, days and venues will randomly be selected. The selected venues are visited during the day and time specified. Study participants are systematically approached and asked to participate.

In this sampling method, every member of the target population has an equal probability of being at the venue at any given time or day. Every person selected agrees to participate. Everyone gives truthful responses. Time–location sampling requires ensuring that no bias is entered into selection of the venue, day and time.

A time–location sample can be derived from key informant interviews which describe where members of the population congregate. Once a full census of these sites has been identified, a random selection of these sites can be chosen for inclusion in the sample.

Time-location sampling allows the same site to be included in the sample frame more than once (for example, at different times of the day or different days of the week). Thus, if the types of individuals in a cluster vary between weekday and weekends and between morning and afternoons, our clusters would be:

- Cluster 1= Site 1 weekday afternoon
- Cluster 2= Site 1 weekday evening
- Cluster 3= Site 1 weekend
- Cluster 4= Site 2 weekday afternoon
- Cluster 5= Site 2 weekday evening
- Cluster 6= Site 2 weekend, etc.

Once clusters have been selected, the most common approach is to randomly select the same number of respondents in each cluster and adjust the data during analysis for the fact that some location/time clusters will have more people associated with them than others. This sampling scheme gets around the fact that the risk behavior in a cluster may vary by time of day. It also means that it is not necessary to count the total number of individuals associated with a cluster, only the number of individuals in the sampling time interval. Measures are required to ensure that the same individuals are not interviewed more than once.

As for conventional cluster sampling, the sampling frame must cover the entire geographical universe of interest and include the majority of sites where group members congregate in sufficient numbers. Clusters should not consist solely of places that group members congregate for HIV prevention activities, as these locations are likely to be associated with people already concerned about HIV and AIDS.

Although time-location sampling is good, however it might be encountered with following limitations such as **(a)** the venues selected might not necessarily be frequented by all of the target population, **(b)** It is difficult to estimate the probability of missing someone who does not attend any of the venues, **(c)** Some venues offer little privacy for disclosure of sensitive information, **(d)** The accuracy of self-reported data given in a public setting is questionable, and **(e)** Identifying venues that Key Affected Populations frequent visit could be exposing them to unwanted attention.

Comparison of Time–Location Sampling and Respondent-Driven Sampling: These two sampling techniques are the most common sampling techniques currently used among populations most-at-risk for HIV. They both have limitations. Sometimes one is preferred over the other.

When the target population is truly hidden, and it is useful to understand the social connections within the population for program planning, respondent-driven sampling needs to be used. When the target population is visible and knowledge of the environment will also assist with program planning, time–location sampling needs to be used.

Some pertinent Issues while adopting sampling techniques:

Accessing high-risk groups for HIV transmission

Household/general population surveys are rarely an appropriate method for locating members of high-risk groups. The group members may not be found in households in sufficient numbers through a household survey and may have behaviors that are too sensitive to discuss in a household setting. It is usually impossible to make a sampling frame of all the members of a high-risk group. One solution is to identify the places high-risk groups congregate, define these as clusters and sample these.

Examples of possible clusters for high-risk groups

| High-risk group | Possible cluster |
|-------------------------------|-------------------------------------|
| Brothel-based sex workers | Brothel |
| Non-brothel-based sex workers | Streets, bars, hotels, guesthouses |
| MSM | Cruising sites |
| PWIDs | Shooting galleries, Injecting sites |
| Truckers | Loading/unloading/halting points |
| Migrants | Households, workplaces |

Unstable Clusters

Unless clusters are all the same size, we need a measure of cluster size in order to ensure the sample is like the target population. It can be hard to measure the size of locations where high-risk groups congregate, as the individuals at the cluster are not fixed (for example, sex workers may move from one site to another). As well as the number of

people, the type of people in a cluster may also vary (for example, sex workers who work in the afternoon may have different risk behaviors than sex workers who work in the evening). This makes it difficult to select a sample that is representative of the entire target population using conventional cluster sampling.

Hard to reach high-risk groups

High-risk groups can be hard to reach because members may be hidden and unwilling to be identified or acknowledge their risk behavior. These difficulties have many implications for sampling:

- Constructing a sample frame of clusters can be difficult if people do not want to disclose the location (for example, brothels).
- Opposition from gatekeepers may cause problems in including clusters in the sample.
- Constructing sample frames within the selected clusters may be difficult, as individuals may not want to be identified as a member of the population.

High-risk groups do not congregate

Some high-risk groups do not congregate making cluster sampling unfeasible for these groups. For example, it is difficult to think of a feasible cluster for home-based sex workers unless they all live in the same area. For other high-risk groups, only some of the population congregates. For example, it is possible to use cruising areas as clusters for some MSM. However, not all MSM frequent cruising areas, and an important section of the MSM population could be missed.

Sampling strategies for various populations

| At higher risk | Possible sampling strategies |
|----------------|---|
| FSWs | Time-location sampling: At hot spots where sex workers sell their trade |
| | Convenience sampling: List of registered sex workers |
| | Convenience sampling: List of STI clinics attendees |
| | Respondent-Driven Sampling: Starting seeds from FSWs |
| CSWs | Cluster sampling: Survey of proxy populations (truck drivers) |
| | Time-location sampling: Hot spots where clients meet sex workers |
| | Convenience sampling: List of STI clinic attendees reporting sex workers visits |
| PWIDs | Respondent-Driven Sampling: Starting seeds from an injecting arcade |
| | Time-location sampling: At street venues where people inject |
| | Convenience sampling: List of treatment centre attendees |
| MSM | Respondent-Driven Sampling: Starting seeds from a club |
| | Time-location sampling: At venues (bars, parks, etc) |
| | Cluster sampling: Using surveys of proxy populations |

12.4 Sample Size Calculation (Time: 60 minutes)

Facilitator should ask “why we need to think about sample size?”

The size of the sample is an important factor to be considered in sampling. This is because; the size has a direct bearing upon accuracy of estimation, cost and administration of the survey. Though, large samples give smaller standard errors, they are, generally, difficult to manage and unfit for detail study. On the other hand, small samples tend to give higher standard error but avoid unnecessary expenses. Therefore, an optimum sample size is required.

An optimum sample size is the one which fulfills the requirements of efficiency, representativeness, reliability and flexibility. The sample should be small enough to avoid unnecessary cost and large enough to avoid intolerable sample errors.

Facilitator should ask “what are the factors that affect the sample size?”

Factors affecting the size of the sample:

1. Nature of the population: If the population to be studied is comparatively homogeneous, a smaller size of the sample may be sufficient. In fact, if all units of the population are exactly alike, one single unit could serve the purpose as a sample. But if the population is heterogeneous, the sample has to be essentially larger in size.

2. Number of classes: If for classification, large number of classes are proposed, the sample must be large enough so that every class may be of a proper size suitable for statistical analysis. If the size of sample is too small, there may be some classes which contain zero, one or two units only. In such cases, analysis could not be done properly and the generalization based upon the findings will also not be correct. Also, in order to detect the occurrence of rare events, the size of a sample should be taken sufficiently large.

3. Nature of the study: The size of a sample depends upon the nature of the investigation. If an intensive study is to be made continuing for a pretty long time, large sample is unfit because it will continue large finance and other resources and also it could not be handled in the matter as required by technical aspects of the study.

4. Types of sampling: The size of the sample depends also on the type of the sampling used. If absolute random sampling is proposed, a much large sample is required. On the other hand, if stratified sample has to be used, the reliability can be achieved in a much smaller sample size. However, care should be taken that the stratification is done properly. If not, it will result into the estimation with high biases.

5. Practical consideration: There are always two types of problems in deciding the size of the sample. The first is the practical consideration of finance and time. The administrators or sponsoring agencies often impose the constraints that the study should be completed within the specified time period and within the specified financial limit. Accuracy of the result is secondary to them.

On the other hand, for the researcher, the accuracy of the results is the prime concern. But in developing countries like Nepal, it is the finance that finally counts. The researcher has to make compromise often with finance and time factors and plan his sample design accordingly.

Important questions in sample size estimation

What is the *key outcome of interest* which is to be evaluated statistically?

How will the key outcome be measured?

What kind of study design does one have?

Are there explicit or implicit dependencies in the data which need to be accounted for?

Factors in sample size estimation

- *A priori information* (literature review, pilot study or expert opinion) about parameters of interest
- Effect size (clinical/public health importance vs. statistical significance)
- Confidence level (*in parameter estimation*)/Tail of the test (*in hypothesis testing*)
- Type I error (*a, in parameter estimation*)/Type I (*a*) & Type II (*b*) errors (*in hypothesis testing*)

Type I Error: Ho rejected when it is true

$\text{Pr}(\text{Type I}) = p$ value represented by α ; Arbitrary conventional value of α (alpha) = 0.05

Likelihood of erroneously rejecting Ho is five percent

Type II Error: Failure to reject Ho when Ha is true (there is a real difference between study groups) $\text{Pr}(\text{Type II}) = \beta$

Power (of a study) = Probability of rejecting Ho and concluding that there is a statistically significant difference between the study groups if one truly exists (1- β)

Arbitrary conventional value β = 0.2, 20 percent chance of a type II error

Power of the study = 0.80, 80 percent chance of detecting a difference of the magnitude specified if one truly exists

Acceptable Type I Error (α = 0.05)

| α | Zα(one-sided) | Zα (two-sided) |
|------|---------------|----------------|
| .01 | 2.33 | 2.58 |
| .025 | 1.96 | 2.24 |
| .05 | 1.64 | 1.96 |
| .10 | 1.28 | 1.64 |

Acceptable Type II error

| β | Zβ | Power |
|-----|------|-------|
| .10 | 1.28 | 90% |
| .20 | 0.84 | 80% |
| .30 | 0.52 | 70% |

Precision

Precision is the reproducibility of multiple measurements and described by the confidence interval around the estimate or standard error.

Precision= S/√n

Where n = Sample Size

S = Standard Deviation

Sampling for a quantitative Characteristic

When sampling for a quantitative characteristic one need to state:

- How precisely one wishes to estimate mean level; that is the amount of sampling error that can be tolerated (d)
- The standard deviation (s) of the distribution of characteristics in the population
- Desired a level , which controls for types I error

For estimating proportion, the minimum required sample size is given by

$$n = \frac{z^2 p(1 - p)}{d^2} \quad \text{for very large population}$$

$$n = \frac{z^2 p(1 - p)}{\frac{d^2 + z^2 p(1 - p)}{N}} \quad \text{for finite population of size N}$$

Where p=proportion, d=sampling errors that can be tolerated. If it is not possible to estimate P, a figure of p=0.5 should be used as this will provide the maximum value of pq= 0.25 (1/4) which will give the maximum number of sample size (n). This is the safest choice for the population proportion.

For example, A local health department wishes to estimate the prevalence of HIV among general population in district "Z". How many people should be included in the sample so that the prevalence may be estimated to within one percentage points of the true value with 95 percent confidence, if it is known that the true rate is unlikely to exceed two percent?

Estimating a population proportion: One-group study

$$n = \frac{z^2 p(1 - p)}{d^2} \quad \text{for very large population}$$

P = Prior information indicated that prevalence of HIV among general population in the district "Z" is 2%

d = Absolute precision = 1% points (might be fluctuated in between 1%-3%)

At 95% confidence interval z at $\alpha=0.05$ is 1.96

$$n = \frac{(1.96)^2 (0.02)(1-0.02)}{0.01^2}$$

$$n = \frac{3.8416 \times 0.02 \times 0.98}{0.0001}$$

$$n = 752.9536 \text{ (753 people from the district "Z" should be included in the sample)}$$

For example, Researcher wishes to determine the knowledge about HIV among general population in mountain VDC "X" that has the population comprised of 1,000. How many people should be included in the sample so that the proportion of the population with knowledge of HIV may be determined to within 10 percentage points of the true value with 95 percent confidence, if it is known that the true proportion of the population with knowledge of HIV is unlikely to exceed 30 percent?

Determining general population:

$$n = \frac{z^2 p(1-p)}{d^2 + z^2 p(1-p)} \quad \text{for finite population of size } N$$

N = Total population of the VDC "X"

P = Prior information indicated that the proportion of people who have knowledge about HIV among general population in the mountain VDC "X" is 30%

d = Absolute precision = 10% points (the proportion of people with knowledge of HIV might be fluctuated in between 20%-40%)

At 95% confidence interval z at $\alpha=0.05$ is 1.96

Estimating number of sample:

$$n = \frac{(1.96)^2 (0.3)(1-0.3)}{(0.1)^2 + (1.96)^2 (0.3)(1-0.3)}$$

$$n = \frac{3.8416 \times 0.3 \times 0.7}{0.01 + \frac{3.8416 \times 0.3 \times 0.7}{1,000}}$$

$$n = \frac{0.806736}{0.01 + \frac{0.806736}{1,000}}$$

$$n = \frac{0.806736}{0.01 + 0.000806736}$$

$$n = \frac{0.806736}{0.010806736}$$

$$n = 74.65 \text{ (75 people from the mountain VDC "A" should be included in the sample)}$$

Note: Following direct assumption may also be adopted while calculating sample size from the finite population.

Sample size by total number of eligible people

| Total number of 'eligible people' at the site | Number to be sampled at the site (sample size) |
|---|--|
| 1–75 | All |
| 76–110 | 75 |
| 111–199 | 100 |
| 200–250 | 110 |
| 251–299 | 120 |
| 300–350 | 130 |
| 351–400 | 135 |
| 401–450 | 140 |
| 451–550 | 145 |
| 551–700 | 155 |
| 701–850 | 160 |
| 851–1,600 | 175 |
| 1,601–2,150 | 180 |
| 2,151–4,340 | 200 |
| 4,341–5,670 | 210 |
| 5,671–10,000 | 215 |
| >10,000 | Consult Statistician |

12.5 Game: (Time: 30 minutes)

- The Rainstorm

Objective: To energize the group

The group forms a circle and the facilitators' stands inside. Only after eye contact each participant should copy the facilitator's action and continue these until next eye contact is made. The sequence is as follows: Click Fingers, Clap Hands, Pat Thighs, Stamp Feet, Slap Thigh and Stamp Feet, Stamp only, Slap Thighs, Clap Hands, Click Fingers, etc.

MODULE 13

Plan for Data Collection

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Meaning of data collection planning,
- (b) Describe various stages in the data collection process and
- (c) Describe typical problems that may arise during data collection and how they may be solved.

Time Frame: 90 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Brainstorming, Plenary session, Assessment/Presentation and Discussion

Course Contents

- a. Rationale for Data Collection Planning
- b. Stages in the Data Collection Process

Group Exercise

- Small Group Discussion

13.1 Rationale for Data Collection Planning (Time: 5 minutes)

Facilitator should ask “why should you develop a plan for data collection?”

A plan for data collection should be developed so that **(a)** you will have a clear overview of what tasks have to be carried out, who should perform them, and the duration of these tasks, **(b)** you can organize both human and material resources for data collection in the most efficient way, and **(c)** you can minimize errors and delays that may result from lack of planning (for example, the population not being available or data forms being misplaced).

It is likely that while developing a plan for data collection, you will identify problems (such as limited human resources) that will require modifications to the proposal. Such modifications might include adjustments of the sample size or extension of the period for data collection.

13.2 Stages in the Data Collection Process (Time: 25 minutes)

Facilitator should ask “what are the main stages need to be taken into consideration during data collection process?”

There are three main stages namely **(a)** permission to proceed, **(b)** data collection, and **(c)** data handling.

(a) Permission to proceed: Consent must be obtained from the relevant authorities, individuals, and the community in which the study is to be carried out. This may involve organizing meeting at national or provincial level, at district, and at village level. Most likely the PI will be responsible for obtaining permission to proceed at the various levels. The NHRC or the analogue institution may assist in obtaining permission from the national level.

(b) Data collection: When collecting our data, we have to consider logistics and quality control.

Logistics of data collection: When allocating tasks for data collection, it is recommended that you first list them. Then you may identify who could best implement each of the tasks. If it is clear beforehand that your research team will not be able to carry out the entire study by itself, you might look for research assistants to assist in relatively simple but time-consuming tasks.

For example, in a study into the effects of improvements in delivery care on utilization of these services the following task division could be proposed.

| Task | To be carried out by |
|------------------------------------|--|
| Record study | Study team |
| FGD with health staff | Study team |
| Individual health staff interviews | Study team |
| Interview with mothers | Research assistant under supervision of study team |
| Observing delivery care | Research assistant under supervision of study team |

Following steps need to be taken into consideration while collecting the data for each component of the study.

Step1: Consider **(a)** the time required to reach the study area(s), **(b)** the time required to locate the study units (persons, groups, records). If you have to search for specific informants (e.g. users or defaulters of a specific service), it might take more time to locate informants than to interview them, and **(c)** the number of visits required per study unit. For some studies, it may be necessary to visit informants a number of times, for example, if the information needed is sensitive and can be collected only after informants are comfortable with the study team or if observations have to be made more than once (follow-up of FSWs or HIV patients). Allowing time for follow-up of non-responsive should also be considered.

Step2: Calculate the number of interviews that can be carried out per day (e.g. 4).

Step3: Calculate the number of days needed to carry out the interviews. For example: you need to do 200 interviews, your study team of 5 people can do $5 \times 4 = 20$ interviews per day, you will need $200/20=10$ days for the interviews.

Step4: Calculate the time needed for the other parts of the study, (for example, 10 days)

Step5: Determine how much time you can devote to the study. Because the study team usually consists of very busy people, it is unlikely that team members can spend more than 30 working days on the entire study.

- Five days for preparation (including pre-testing and finalizing consent forms/ questionnaires)
- Twenty days actual fieldwork
- Five days data processing and preliminary analysis

If the team has 20 days for fieldwork, as in the example above, it could do the study without extra assistance. However, if the research team has only five days available for the interviews, they would need an additional five research assistant to help complete this part of the study.

If research assistants are required, consider to what extent local health workers can be used. They have the advantage of knowing the local situation. They should never be involved, however, in conducting interviews to evaluate the performance of their own health facility. Local staff from related services (teachers, community development) or students might help out. Sometimes village health workers or community members can collect certain parts of the data.

Note: It is always advisable to slightly overestimate the period needed for data collection to allow for unforeseen delays or contingency plan.

In what sequence should data be collected?

In general, it is advisable to start with analysis of data already available. This is essential if the sample of respondents is to be selected from the records. Another rule of thumb is that qualitative research techniques (such as FGD) that are devised to focus the content of questionnaire should be carried out before finalization of the questionnaire. If the FGDs are to provide feedback on issues raised in larger surveys, however, they should be conducted after preliminary analysis of the questionnaires.

To use time and transport efficiently, data to be drawn from different sources in one facility should be collected at the same time, for example, interviews with staff in a health facility, observation of available equipments in the health facility, and interviews with patients living nearby should be schedules together.

When should the data be collected?

The actual time that the data will be collected will be determined by the types of data to be collected and the demands of the project. Consideration should be given to:

- Availability of study team members and research assistants
- The appropriate seasons(s) to conduct the fieldwork (if the problem is season-related or if data collection would be difficult during certain periods)
- Accessibility and availability of the sampled population,
- Public holidays and vacation periods, and
- Bandas and Strikes

Quality control: It is extremely important that the data we collect are of good quality, that is, reliable and valid. Otherwise, we may come up with false or misleading conclusions. There are always possible sources of data distortion (bias). Biases we should try to prevent include:

- Deviations from the sampling procedures set out in the proposal
- Variability or bias in observations or measurements made because:
 - ♦ Study participant changes his/her behaviors as a consequence of the research. For example, a participant may act more positively while being observed; blood pressure and pulse may increase when the participant is apprehensive
 - ♦ We use unstandardized measuring instruments. For example, we may use unstandardized weighing scales or imprecise or no guidelines for interviewing.
- Researchers themselves vary in what they observe or measure (observe variability). For example, researcher may be selective for their observations (observe bias); measure, question, or note down answers with varying accuracy or follow different approaches (one being more open, friendly, probing than the other).
- Variation in criteria for measurement or for categorizing answers because we changed them during the study.

There are several other aspects of the data collection process that will help ensure data quality. You should:

- Prepare a fieldwork Manual of Operation (MOP) for the study team as a whole, and the MOP including:
 - ♦ Specific sampling procedures and what to do if respondents are not available or refuse to cooperate, and
 - ♦ Instructions on how to ask certain questions and how to record the answers.
- Select your research assistants, if required, with care. Choose assistants that are:
 - ♦ From the same educational level,
 - ♦ Knowledgeable concerning the topic and local conditions,
 - ♦ Not the object of study themselves, and
 - ♦ Not biased concerning the topic (for example, health staff are usually not the best interviewers for a study on alternative health practices)
- Train research assistants carefully in all topics covered in the fieldwork MOP as well as in interview techniques and make sure that all members of the research team master interview techniques such as:

- ♦ Asking questions in a neutral manner,
- ♦ Not showing by words or expression what answers one expects,
- ♦ Not showing agreement, disagreement or surprise,
- ♦ Must be an expert listener, and
- ♦ Recording answers precisely as they are provided, without sifting or interpreting them.
- Preparation of data collection process
 - ♦ A good setting should be found, so as to avoid disturbance, privacy for example from other people, from telephones, from street noise, etc.
 - ♦ Time has to be spent on the identification of interviewees, and the time of interview has to be arranged.
 - ♦ Decisions have to be made for an interview schedule, if more than one interview is set on the same day. It is often quite difficult to determine beforehand how long time an open-ended interview will take. It is usually better to allow sufficient time between interviews and use the expected waiting time for note-taking, labeling the tape, and for a needed break before the next interview.
 - ♦ During interviewing, all questions should be simplified as much as possible. One should never ask two questions at the same time, like “have you seen any FWSs today, and if yes, could you please provide the details?”
- Pre-test research instruments and research procedures with the whole study team, including research assistants
 - ♦ Equipment should be checked and re-checked, and the researcher must familiarize him/herself with the equipment before first use.
 - ♦ Availability of tape recorder, tapes, batteries, adaptor, note pad, pen, etc should be checked.

Note: Pre-testing is basically for obtaining highest possible level of uniformity and standardization of data collection procedures in the entire study population.

- Take care that research assistants are not placed too much stress (requiring too many interviews a day; paying per interview instead of per day)
- Arrange for on-going supervision of research assistants. If, in case of a larger survey, special supervisors have to be appointed, supervisory MOP should be developed for their use.
- Devise methods to assure the quality of data collected by all members of the study team. For example, quality can be assured by
 - ♦ Requiring interviewers to check whether the questionnaire is filled in completely and logical of skip patterns before finishing each interview.
 - ♦ Asking the supervisor or peer to check at the end of each day during the data collection period whether the questionnaires are filled in completely and whether the recorded information makes sense,

(c) **Data handling:** Once the data have been collected, a clear procedure should be developed for and storing them:

- It is necessary to check that the data gathered are complete and accurate.
- At some stage questionnaires will have to be numbered. Decide if this should be done at the time of the interview or at the time the questionnaires are stored.
- Identify the person responsible for storing data and the place where they will be stored.
- Decide how data should be stored. Record forms should be kept in the sequences in which they have been numbered.

13.3 Group Exercise (Time: 60 minutes)

- Small Group Discussion

The training facilitator should divide randomly all the participants into smaller groups consisting of five to eight people in one group. Participants need to work further for the outputs (questionnaire, observation sheet and in-depth interview) of the group exercise of Module 11. They need to make a plan for data collection, considering the following points:

(a) Permission to proceed (5 minutes)

- Which organizations or individuals should be approached to obtain permission to proceed with the study protocol?
- Who will ask for permission? When? What procedure will be followed?

(b) Data Collection (30 minutes)

- List the different components of your study and the number of interviews, observations, or measurements required.
- Calculate for each component how many interviews or observations can be done per day by one person.
- Decide if you need extra assistance, considering the fact that you, as a study team, will probably not be able to spend more than approximately 20 working days per person in the field and five days per person for preparation of the field work.
- If you need research assistants: for which components of the research? How many research assistants? who would be the right persons to assist you and for how many days will you need them?
- How will you train them? (place, timing, content, duration, trainers).
- How will you ensure their supervision?
- How will the quality of data be checked and by whom?

(c) Data handling (5 minutes)

- How will the questionnaires/observation checklists be numbered?
- How will the data be stored and who has the final responsibility for storing the data?

(d) Ethical consideration (10 minutes)

- Take care that your data-collection process is ethical in all respects:
 - ◆ How have you planned to obtain informed consent from your informants? Are there any categories of informants (vulnerable population) that need special consideration
 - ◆ Are certain parts of the research focused on sensitive issues? How will you handle problems that may arise?
 - ◆ Do certain parts of your research require extra attention to assure confidentiality? How will you handle this issue?

Facilitator should give at least 40 minutes to work on the task stated above and tell them to summarize the outcome of your group work on a flip chart (20 minutes). Record the details of your discussions so that you can use them in developing your work plan (module 16).

MODULE 14

Pretesting the Data Collection Tools

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Define meaning of pretesting and its importance,
- (b) Describe the components of a pretest that will allow you to test and
- (c) Plan and carry out pretests of research components.

Time Frame: 45 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Assessment/Presentation and Discussion

Course Contents

- a. Meaning of Pretesting and its Rationale
- b. Evaluation of the Basic Aspects of Methodology during Pretesting

14.1 Meaning of Pretesting and its Rationale (Time: 5 minutes)

Facilitator should ask “what is pre-testing and why it is important to conduct?”

A pre-test usually refers to a small-scale trial of particular research components. A pre-test serves as a test run that allows us to identify potential problems in the proposed study. Although this means extra effort at the beginning of a research project, the pre-test enables us, if necessary, to revise the methods, tools and logistics of data collection before starting the actual fieldwork. As a result, a good deal of time, effort and money can be saved in the long run. Pre-testing is simpler and less time-consuming. Therefore, we will concentrate on pre-testing as an essential step in the development of research projects.

14.2 Evaluation of the Basic Aspects of Methodology during Pretesting (Time: 40 minutes)

Facilitator should ask “what aspects of your research methodology can be evaluated during pre-testing?”

- (a) *Reactions of the respondents to the research procedures* can be observed in the pre-test to determine: (i) availability of the study population and how respondents’ daily work schedules can best be respected; (ii) acceptability of the methods used to establish contact with the study population; (iii) acceptability of the questions asked; and willingness of the respondents to answer the questions and collaborate with the study.
- (b) *The data-collection tools* can be pre-tested to determine: (i) whether the tools you use allow you to collect the information you need and whether those tools are reliable. You may find that some of the data collected is not

relevant to the problem or is not in a form suitable for analysis. This is the time to decide not to collect this data or to consider using alternative techniques that will produce data in a more usable form; (ii) how much time is needed to administer the interview guide/questionnaire, to conduct observations or group interviews, and/or to make measurements, (iii) whether there is any need to revise the format or presentation of interview guides/questionnaires, including whether: the sequence of questions is logical, the skipping patterns are followed properly, the wording of the questions is clear, translations are accurate, and space for answers is sufficient. Apart from these, there is a need to pre-categorize some answers or to change closed questions into open-ended questions including adjustment of the coding system, and additional instructions for interviewers (e.g. guidelines for 'probing' certain open questions).

- (c) *Sampling procedures* can be checked to determine: (i) whether the instructions concerning how to select the sample are followed in the same way by all staff involved, and (ii) how much time is needed to locate individuals to be included in the study.
- (d) *Staffing and activities of the research team* can be checked, while all are participating in the pre-test, to determine: (i) how successful the training of the research team has been, (ii) what the work output of each member of the staff is, (iii) how well the research team works together, (iv) whether logistical support is adequate (v) the reliability of the results when instruments or tests are administered by different members of the research team, (vi) whether staff supervision is adequate.

Note: *The pre-test can be seen as a period of extra training for the research team in which sensitivity to the needs and wishes of the study population can be developed.*

- (e) *Procedures for data processing and analysis* can be evaluated during the pre-test. Items that can be assessed include: (i) appropriateness of data master sheets and dummy tables and the ease of use, (ii) effectiveness of the system for quality control of data collection, (iii) appropriateness of statistical procedures (if used), and (iv) clarity and ease with which the collected data can be interpreted.
- (f) The proposed *work plan and budget for research activities* can be assessed during the pre-test. Issues that can be evaluated include: (i) appropriateness of the amount of time allowed for the different activities of planning, implementation, supervision, co-ordination and administration, (ii) accuracy of the scheduling of the various activities.

Facilitator should ask “when should we carry out a pretest?”

You might consider (a) pre-testing at least your data collection tools in the actual field situation, and (b) pre-testing the data collection and data-analysis process one-two weeks before starting the fieldwork, with the whole research team (including research assistants, if required) so that you have time to make revisions.

Facilitator should ask “which components should be assessed during pretesting?”

Depending on how closely the pre-test situation resembles the area in which the actual field work will be carried out, it may be possible to pre-test (a) the reactions of respondents to the research procedures and to questions related to sensitive issues, (b) the appropriateness of study type(s) and research tools selected for the purpose of the study (e.g., validity: Do they collect the information you need? and reliability: Do they collect the data in a precise way?), (c) the appropriateness of format and wording of questionnaires and interview schedules and the accuracy of the translations, (d) the time needed to carry out interviews, observations or measurements, (e) the feasibility of the designed sampling procedures, (f) the feasibility of the designed procedures for data processing and analysis.

Even if you cannot assess all these components fully, the field experience will provide information that will be quite valuable to you in reviewing the methodological aspects of your proposal and in planning your work plan and budget.

All the issues mentioned above will have to be thoroughly reviewed during a pre-test in the actual field situation. Other issues, such as the functioning of the research team, including newly recruited and trained research assistants, and the feasibility of the work plan, can only be tested in the research area.

Note:

It is highly recommended that you analyze the data collected during the pre-test right away. Then finalize and adjust the master sheets, if necessary. Make totals for each variable included in the master sheets. Fill in some dummy tables and prepare all the dummy tables you need, considering your research objectives.

Do all this even if you plan to analyze the data by computer. You will detect shortcomings in your research tools that you can still correct! Generally, the analysis of pretesting will not be incorporated in the report however in the qualitative study; pretest can also be included during main data analysis.

Facilitator should ask “who should be involved in the pre-test?”

The research team headed by the principal investigator.

Any additional research assistants or data collectors that have been recruited.

Facilitator should ask “how long should the pretest last?”

The time required for a pre-test will be determined by a number of factors: (a) the size and duration of the research project (the longer the study will take, the more time you might reserve for the test run), and (b) the complexity of the methodology used in the research project.

Keep in mind that this is the last chance you will have to make adjustments which will help to ensure the quality of your fieldwork. If you have a 20 days field work period you might reserve at least 3-5 days for pre-testing your data collection tools, analyzing the results of the pre-test, finalizing your tools and elaborating the work plan.

MODULE 15

Data Management

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Define meaning of data and data management,
- (b) Describe how data can best be analyzed and interpreted based on the objectives and variables of the study and
- (c) Prepare a plan for the processing and analysis of data (including data master sheets and dummy tables).

Time Frame: 45 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Brainstorming, Plenary session, Assessment/Presentation and Discussion

Course Contents

- a. Plan for Data Processing and Cleaning
- b. Plan for Data Analysis

Group Exercise

- Small Group Discussion

15.1 Plan for Data Processing and Cleaning (Time: 20 minutes)

Facilitator should ask “what are data and data managements?”

The word “data” is derived from Latin language [Datum (singular) – Data (plural)]. It is the collection of facts of figures, or we can say it is the raw material to be processed by a computer. Anything that are input to the computer are data, even pictures, photographs, drawings, charts and maps are also data. Computer processes the data and produces the output or result. So it is a set of signals which will be converted into information after processing properly.

Data management means the processes of handling the data through the study - before, during and after data collection. This is done basically for quality assurance (activities to ensure quality of data before data collection), and quality control (monitoring and maintaining the quality of data during the conduct of the study and while entering the data sets in the computer).

Steps in Quality Assurance:

Develop procedures for data collection and processing [SOP, wherein detailed descriptions of exactly how the procedures specific to each data collection instruments (including its coding pattern in case of questionnaire and calibration in case of electronic/mechanical devices) are to be carried out, e.g. blood pressure, height, weight, blood glucose, asking questions (including skip questions), settings while taking interview,etc. need to be specified].

Steps in Quality Control:

- Personnel training of all procedures for data collection.
- Observation of field procedures whether it is in line with protocol or not.
- On site observation of field researchers performance.
- Cross check the data at the field level.
 - ◆ Match field diary with work performed
 - ◆ Random sample of filled questionnaire and go for checking
 - If a questionnaire has not filled completely you will have missing data for some of your variables. If there are many missing items in a particular questionnaire, you may decide to exclude the whole questionnaire from further analysis
 - If an inconsistency is clearly due to a mistake made by the researcher or assistant (for example, if a person in an earlier question is recorded as being a non-CSW, whereas all other questions reveal that he is CSW), it may still be possible to check with the person who conducted the interview and to correct the answer.
 - If the inconsistency is less clearly a mistake in recording, it may be possible (in a small scale study) to return to the respondent and ask for clarification.
 - If it is not possible to correct information that is clearly inconsistent, you may consider excluding this particular part of the data from analysis. If a certain question produces ambiguous or vague answers throughout, the whole question should be excluded from data analysis.
 - ◆ Field editing by supervisor, field editor.....etc.
- Cross check the data entered in the computer
 - ◆ Match ID in questionnaire and data entered in computer,
 - ◆ Double entry and compared the data between the two entry,
 - ◆ Look for various levels in a variable that are collapsed,
 - ◆ Look for dummy variables,
 - ◆ Look for master data file,etc.

Data Storage and Security

- Lock in filing cabinets,
- Placed in secure place, if entered in computer, password protected,
- All personal information must be kept separate from their identifiers,
- Make one central place (locked drawer) where you will keep a single list of all participants, names and other information connected to IDs.

Facilitator should ask “what is data processing?”

The data, after collection, has to be processed and analyzed in accordance with the outline laid down for the purpose at the time of developing the research plan. Technically speaking, processing implies (a) editing, (b) coding, (c) classification and (d) tabulation of collected data so that they are amendable to analysis.

(a) Editing: Editing of data is a process of examining the collected raw data (especially in surveys) to detect errors and omissions and to correct these when possible. As a matter of fact, editing involves a careful scrutiny of the completed questionnaires and/or schedules. Editing is done to assure that the data are accurate, consistent with other facts gathered, uniformly entered, as complete as possible and have been well arranged to facilitate coding and tabulation.

With regard to points or stages at which editing should be done, one can talk of field editing and central editing. *Field editing* consists in the review of the reporting forms by the investigator for completing (translating or rewriting) what the latter has written in abbreviated and/or in illegible form at the time of recording the respondents' responses. In some cases, field editor can also be used during data collection. This type of editing is necessary in view of the fact that individual writing styles often can be difficult for others to understand. This sort of editing should be done as soon as possible after the interview, preferably on the very day or on the next day. While doing

field editing, the investigator must restrain him/herself, and must not correct errors of omission by simply guessing what the informant would have said if the question had been asked.

Central editing should take place when all forms or schedules have been completed and returned to the office. This type of editing implies that all forms should get a through editing by a single editor in a small study and by a team of editors in case of a large inquiry. Editors(s) may correct the obvious errors such as an entry in the wrong place, entry recorded in months when it should have been recorded in weeks, and the like. In case of inappropriate or missing replies, the editor can sometimes determine the proper answer by reviewing the other information in the schedule. At times, the respondent can be contacted for clarification. The editor must strike out the answer if the same is inappropriate and he/she has no basis for determining the correct answer or the response. In such a case an editing entry of 'no answer' is called for. All the wrong replies, which are quite obvious, must be dropped from the final results, especially in the context of mail surveys.

Editors must keep in view several points while performing their work: **(i)** They should be familiar with instructions given to the interviewers and coders as well as with the editing instructions supplied to them for the purpose, **(ii)** While crossing out an original entry for one reason or another, they should just draw a single line on it so that the same may remain readable, **(iii)** They must make entries (if any) on the form in a standardized manner, **(iv)** They should initial all answers which they change or supply, and **(v)** Editor's initials and the date of editing should be placed on each completed form or schedule.

Changing or correcting a response

- If a ✓ is marked in the wrong box, draw a single line through the incorrectly marked box, initial and date it, then mark the correct box.



JD 07/JAN/13

- Proper correction for an incorrect entry.

4

—|5|— JD 07/JAN/13

- When changing an entry, draw a single line through the incorrect entry so that it still can be read, initial and date it. Do not cover the incorrect entry with excessive cross-outs.

Correct:

4

—|5|— JD 07/JAN/13

Incorrect:



- If the correct answer has been previously crossed out, circle the correct item, write an explanation in a blank area near the item, and initial and date all corrections.

—4—
—|5|— JD 07/JAN/13

"Should be 5" CR 13/FEB/13

**Always initial and date any changes you make.
Do not use any type of correction fluid on the forms!**

(b) Coding: It is a method used to convert (translate) the data gathered during the study into symbols appropriate for analysis. It refers to the process of assigning numerals. Coding decisions should usually be taken at the designing stage of the questionnaire. This makes it possible to pre-code the questionnaire choices and which in turn is helpful for computer tabulation as one can straight forward key punch from the original questionnaires. But in case of hand coding, some standard method may be used. One such standard method is to code in the margin with a

colored pencil. The other method can be to transcribe the data from the questionnaire to a coding sheet. Whatever method is adopted, one should see that coding errors are altogether eliminated or reduced to the minimum level.

For computer analysis, each category of a variable is usually given a number; for example, the answer “yes” may be coded as 1, “no” as 2. There are some specific coding patterns in order to indicate “other” as “96”, “not applicable” as “97”, “don’t know” as “98”, and “no response” as “99”.

The codes should be entered on the questionnaire (or checklists) themselves. When finalizing your questionnaire, for each question, you should insert a box for the code in the right margin of the page. These boxes might not be used by the interviewer. They might be filled in afterwards during data processing. Take care that you have as many boxes as the number of digits in each code.

| QN | Question | Responses | Code |
|----|--|-----------------|---|
| 1 | What is your caste/ethnicity? <i>(write caste/ethnicity in the line provided)</i> | Caste/Ethnicity | <input type="text"/> <input type="text"/> |

For closed ended question, the code should be appeared in each of those probable responses, and interviewer should encircle the appropriate code.

| QN | Question | Coding Category | Encircle the Code |
|----|---|--------------------|-------------------|
| 2 | How old were you at your last birthday? | Less than 15 years | 1 |
| | | 15 – 19 years | 2 |
| | | 20 – 24 years | 3 |
| | | 25 – 29 years | 4 |
| | | 30 – 34 years | 5 |
| | | 35 – 39 years | 6 |
| | | 40 years & above | 7 |
| | | Don't Know | 98 |

For the question that has to follow skip pattern, you should follow as per instruction given below.

| QN | Question | Coding Category | Encircle the Code | Go to QN |
|----|---|------------------------------------|-------------------|----------|
| 3 | In your opinion, was the provider who treated you skilled to provide such services? | Yes | 1 | 5 |
| | | No | 2 | |
| | | Don't know | 98 | 5 |
| | | No response | 99 | 5 |
| 4 | If respondent say "No", Why do you think s/he was not skilled? <i>(multiple response possible)</i> | Did not use instrument | 1 | |
| | | Frequent consultations with others | 2 | |
| | | Not confident | 3 | |
| | | Re-write in prescription | 4 | |
| | | Refer for minor problems | 5 | |
| | | Other (specify) _____ | 96 | |

Or

Code

| | | | |
|---|--|---------------------------|---|
| 4 | If respondent say "No", Why do you think s/he was not skilled? | (write his/her responses) | <input type="text"/> <input type="text"/> |
|---|--|---------------------------|---|

Note: If you intend to process your data by computer, always consult an experienced person or statistician before you finalize your questionnaire. With commercial spread sheet and data entry programs available and with help from a programmer, data entry screen can be designed to look the same as the questionnaire and as the same time data code can be assigned in the program.

(c) Classification: Most research studies result in a large volume of raw data which must be reduced into homogeneous groups if we are to get meaningful relationships. This fact necessitates classification of data which happens to be the process of arranging data in groups or classes on the basis of common characteristics. Data having a common characteristic are placed in one class and in this way the entire data get divided into a number of groups or classes. Classification can be one of the following two types, depending upon the nature of the phenomenon involved:

(a) Classification according to attributes: As stated above, data are classified on the basis of common characteristics which can either be descriptive (such as literacy, sex, honesty, etc.) or numerical (such as weight, height, income etc.). Descriptive characteristics refer to qualitative phenomenon which cannot be measured quantitatively; only their presence or absence in an individual item can be noticed. Data obtained this way on the basis of certain attributes are known as *statistics of attributes* and their classification is said to be classification according to attributes.

Such classification can be simple classification. In simple classification we consider only one attribute and divide the universe into two classes—one class consisting of items possessing the given attribute and the other class consisting of items which do not possess the given attribute.

(b) Classification according to class-intervals: Unlike descriptive characteristics, the numerical characteristics refer to quantitative phenomenon which can be measure through some statistical units. Data relating to income, production, age, weight, etc. come under this category. Such data are known as *statistics of variables* and are classified on the basis of class intervals. For instance, persons whose incomes, say, are within Rs. 201 to Rs. 400 can form one group; those whose incomes are within Rs. 401 to Rs. 600 can form another group and so on. In this way, the entire data may be categorized. Each group or class-interval, thus, has an upper limit as well as a lower limit which are known as class limits. The difference between the two class limits is known as class magnitude. We may have classes with equal class magnitudes or with unequal class magnitudes. The number of items which fall in a given class is known as the frequency of the given class. All the classes or groups, with their respective frequencies taken together and put in the form of a table, are described as group frequency distribution or simply frequency distribution. Classification according to class intervals usually involves the following three main problems:

(i) How many classes should be there? What should be their magnitudes? There can be no specific answer with regard to the number of classes. The decision about this calls for skill and experience of the researcher. However, the objective should be to display the data in such away as to make it meaningful for the analyst. Typically, we may have 5 to 15 classes. With regard to the second part of the question, we can say that, to the extent possible, class-intervals should be of equal magnitudes, but in some cases unequal magnitudes may result in better classification. Hence the researcher's objective judgment plays an important part in this connection.

(ii) How to choose class limits? While choosing class limits, the researcher must take into consideration the criterion that the mid-point (generally worked out first by taking the sum of the upper limit and the lower limit of a class and then divide this sum by 2) of a class-interval and the actual average of items of that class interval should remain as close to each other as possible. Consistent with this, the class limits should be located at multiples of 2, 5, 10, 20, 100 and such other figures. Class limits may generally be stated in any of the following forms:

Exclusive type class intervals: They are usually stated as follows:

10-20
20-30
30-40
40-50

The above intervals should be read as under:

10 and under 20
20 and under 30
30 and under 40
40 and under 50

Thus, under the exclusive type class intervals, the items whose values are equal to the upper limit of a class are grouped in the next higher class. For example, an item whose value is exactly 30 would be put in 30—40 class interval and not in 20—30 class interval. In simple words, we can say that under exclusive type class intervals, the upper limit of a class interval is excluded and items with values less than the upper limit (but not less than the lower limit) are put in the given class interval.

Inclusive type class intervals: They are usually stated as follows:

11-20
21-30
31-40
41-50

In inclusive type class intervals the upper limit of a class interval is also included in the concerning class interval. Thus, an item whose value is 20 will be put in 11-20 class interval. The stated upper limit of the class interval 11-20 is 20 but the real limit is 20.99999 and as such 11-20 class interval really means 11 and under 21.

When the phenomenon under consideration happens to be a discrete one (i.e., can be measured and stated only in integers), then we should adopt inclusive type classification. But when the phenomenon happens to be a continuous one capable of being measured in fractions as well, we can use exclusive type class intervals.

(d) Tabulation: When a mass of data has been assembled, it becomes necessary for the researcher to arrange the same in some kind of concise and logical order. This procedure is referred to as tabulation. Thus, it is the process of summarizing raw data and displaying the same in compact form (i.e., in the form of statistical tables) for further analysis. In a broader sense, it is an orderly arrangement of data in columns and rows.

Tabulation is essential because of the following reasons.

- It conserves space and reduces explanatory and descriptive statement to a minimum.
- It facilitates the process of comparison.
- It facilitates the summation of items and the detection of errors and omissions.
- It provides a basis for various statistical computations.

Tabulation can be done by hand or by mechanical or electronic devices. The choice depends on the size and type of tabulation machines or computers. In relatively large inquiries, we may use mechanical or computer tabulation if other factors are favorable and necessary facilities are available. Hand tabulation is usually preferred in case of small inquiries where the number of questionnaires is small and they are of relatively short length. Hand tabulation may be done using the direct tally, the list and tally and count methods. When there are simple codes, it is feasible to tally directly from the questionnaire. Under this method, the codes are written on a sheet of paper, called tally sheet, and for each response a stroke is marked against the code in which it falls. Usually after every four strokes against a particular code, the fifth response is indicated by drawing a diagonal or horizontal line through the strokes. These groups of five are easy to count and the data are sorted against each code conveniently. In the listing

method, the code responses may be transcribed onto a large work-sheet, allowing a line for each questionnaire. This way a large number of questionnaires can be listed on one work sheet. Tallies are then made for each question.

For example,

An Illustrative Tally Sheet for Determining the Number of 70 Families in Different Income Groups.

| Income groups (Rupees) | Tally mark | Number of families or (Class frequency) |
|-------------------------------|-------------------|--|
| Below 400 | III IIII III | 13 |
| 401—800 | III III III IIII | 20 |
| 801—1200 | III IIII II | 12 |
| 1201—1600 | III III III IIII | 18 |
| 1601 and above | III II | 7 |
| Total | | 70 |

Tabulation may also be classified as simple and complex tabulation. Some tabulation gives information about one or more groups of independent questions, whereas the another tabulation gives the division of data in two or more categories and as such is designed to give information concerning one or more sets of inter-related questions. Simple tabulation generally results in one-way tables which supply answers to tabulation usually results in two-way tables (which give information about two inter-related characteristics of data), three-way tables (giving information about three interrelated characteristics of data) or still higher order tables, also known as manifold tables, which supply information about several interrelated characteristics of data. Two-way tables, three-way tables or manifold tables are all examples of what is sometimes described as cross tabulation.

With nowadays computer technology and programming, research data tabulations mostly, if not all, are done by computer. With computer, it is easy to create manifold tables that take less time and accurate.

Generally accepted principles of tabulation: Such principles of tabulation, particularly of constructing statistical tables, can be briefly stated as follows:

1. Every table should have a clear, concise and adequate title indicating as what has been presented in the table and this title should always be placed just above the body of the table.
2. Every table should be given a distinct number to facilitate easy reference.
3. The column headings and the row headings of the table should be clear and brief.
4. The units of measurement under each heading or sub-heading must always be indicated.
5. Explanatory footnoted, if any, concerning the table should be placed directly beneath the table, along with the reference symbols used in the table.
6. Source or sources from where the data in the table have been obtained must be indicated just below the table.
7. Usually the columns are separated from one another by lines which make the table more readable and attractive.
8. Those columns whose data are to be compared should be kept side by side. Similarly, percentages and/or average must also be kept close to the data. Also where appropriate, 'total' column should be presented.
9. It is generally considered better to approximate figures before tabulation as the same would reduce unnecessary details in the table itself.

10. It is important that all column figures be properly aligned. Decimal points and (+) or (-) signs should be in perfect alignment.
11. Abbreviations should be avoided to the extent possible
12. Miscellaneous and exceptional items, if any, should be usually placed in the last row of the table.
13. Table should be made as logical, clear, accurate and simple as possible.
14. Total of rows should normally be placed in the extreme right column and that of columns should be placed at the bottom.
15. The arrangement of the categories in a table may be chronological, geographical, alphabetical or according to magnitude to facilitate comparison. Above all, the table must suit the needs and requirements of an investigation.

15.2 Plan for Data Analysis (Time: 10 minutes)

Facilitator should ask “what is data analysis?”

The term analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data-groups. Thus, “in the process of analysis, relationships or differences supporting or conflicting with original or new hypotheses should be subjected to statistical tests of significance to determine with what validity data can be said to indicate any conclusions”. Analysis of data in a general way involves a number of closely related operations which are performed with the purpose of summarizing the collected data and organizing these in such a manner that they answer the research questions(s).

Frequency counts

From the data master sheet, simple tables can be made with frequency counts for each variable. A frequency count is an enumeration of how often a certain measurement or a certain answer to a specific question occurs.

For examples, 63 MSM and 74 PWIDs are found in Pokhara lakeside area.

| | |
|-------|-----|
| MSM | 63 |
| PWIDs | 74 |
| Total | 137 |

If numbers are large enough it is better to calculate the frequency distribution in percentages (relative frequency). This makes it easier to compare groups than when only absolute numbers are given. In other words, percentages standardize the data.

Note: A percentage is the number of units in the sample with a certain characteristics, divided by the total number of units in the sample and multiplied by 100.

In the above example, the calculation of the percentage answers the question: If I had asked 137 people who had sex with men, 63 people would have answered “yes”? The percentage of people answering “yes” would be:

$$\frac{63}{137} \times 100 = 46\%$$

A frequency table such as the following could then be presented:

Table 1. Numbers of MSM* and FSWs** in the sample

| Category | Frequency*** | Relative frequency |
|----------|--------------|--------------------|
| MSM | 63 | 46% |
| PWIDs | 74 | 54% |
| Total | 137 | 100% |

*MSM: Men having Sex with Men

**PWIDs: People Who Inject Drugs

***Missing data: 3

Note: Sometime data are missing due to non responsive or refusals or (in oral interviews) non recording by the interviewer. Usually you do not use missing data in the calculation of percentages. However, the number of missing data is a useful indication of the quality of your data collection and, therefore, this number should be mentioned as above in the table 1.

“Don’t know” is not to be taken as a non response. If applicable, a category “don’t know” should appear in the data master sheet and in the frequency table. We can also add about “refuse to answer” category.

It is usually necessary to summarize the data from numerical variables by dividing them into categories. This process includes the following steps:

1. Inspect all the figures: What is their range? (The range is the difference between the largest and the smallest measurement)
2. Divide the range in three to five categories. You can either aim at having a reasonable number in each category (e.g. 0-2 km, 3-4 km, 5-9 km, 10+km for home-clinic distance) or you can define the categories in such a way that they all start with round numbers (e.g. 20-29 years, 30-39 years, 40-49 years, etc) or by a standard reference that have meaning such as under age (<18 years), young adults (18-25 years), 26-30 years, 31-35 years, etc.
3. Construct a table indicating how data are grouped and count the number of observations in each group.

When inspecting frequency distributions and ranges, you may still discover that certain data are incorrect. In this case, appropriate action must be taken, as described in the steps of quality-control.

Cross-tabulations

In addition to making frequency counts for one variable at a time, it may be useful to combine information on two or more variables to describe the problem or to arrive at possible explanations for it. For this purpose, it is necessary to design cross-tabulations.

Depending on the objectives and the type of study, three different kinds of cross-tabulations may be required.

- Descriptive cross-tabulations, which aim at describing the problem under study,
- Analytic cross-tabulations, in which groups are compared to determine differences, and
- Analytic cross-tabulations, which focus on exploring relationships between variables.

When the plan for data analysis is being developed, the data are, of course, not yet available. However, to visualize how the data can be organized and summarized, it is useful at this stage to construct so called dummy cross-tabulation.

A dummy table contains all elements of a real table, except that the cells are still empty. A descriptive cross-tabulation would, for example, relate sex behavior to occupational background:

Table 2. Sex behavior by occupational background.

| Occupational background | Habit of going towards FSWs* | Not going towards FSWs* | Total |
|-------------------------|------------------------------|-------------------------|-------------------|
| Truck Drivers | 25 (52.1%) | 23 (47.9%) | 48 (100%) |
| Bus Drivers | 18 (37.5%) | 30 (63.5%) | 48 (100%) |
| Taxi Drivers | 8 (16.6%) | 40 (83.4%) | 48 (100%) |
| Total | 51 (35.4%) | 93 (64.6%) | 144 (100%) |

*FSWs: Female Sex Workers

An *analytic cross-tabulation* serves to investigate if there is a relationship between sex behavior (independent variable) and HIV infection (dependent variable)

For example, in the exercise it would be useful to compare the HIV prevalence between category of sex behaviors.

Table 3. HIV infection by Sex behavior.

| Sex behavior | HIV +ve | HIV -ve | Total |
|------------------------------|------------------|--------------------|-------------------|
| Habit of going towards FSWs* | 11 (21.6%) | 40 (78.4%) | 51 (100%) |
| Not going towards FSWs* | 3 (3.2%) | 90 (96.8%) | 93 (100%) |
| Total | 14 (9.7%) | 130 (90.3%) | 144 (100%) |

*FSWs: Female Sex Workers

In a research proposal, dummy tables should be prepared to show the major relationships between variables.

Note: *It is extremely important to determine before you start collecting the data what tables you will need to assist you in looking for possible explanations of the problem you have identified. This will prevent you from collecting too little or too much data in the field. It will also save you much time in the data-processing stage. Case should be taken not to embark on an unstructured comparison of all possible variables. The dummy tables need to be prepared from the specific objectives of the study.*

Some practical hints when constructing tables:

- If a dependent and an independent variable are cross-tabulated, the independent variable is usually placed vertically (at the left side of the table in a column) and the dependent variable horizontally along the top of the table.
- All tables should have a clear title and clear headings for all rows and columns.
- All tables should have a separate row and a separate column for totals to enable you to check if your totals are the same for all variables and to make further analysis easier.
- All tables related to each objective should be numbered and kept together so the work can be easily organized and the writing of the final report will be simplified.

Analysis of qualitative data

Qualitative data may be collected through open-ended questions in self-administered questionnaires, individual interviews, FGDs, or through observations during fieldwork.

Commonly requested data in open-ended questions include:

- Opinions of respondents on a certain issue
- Reasons for a certain behavior; and
- Description of certain procedures, practices, or beliefs/knowledge with which the researcher is not familiar.

Note that these data may also be obtained from questions asking for comments, following a closed question.

The data can be analyzed in three steps:

Step1: List the data for each question. Take care to include the source of each item you list (in the questionnaires, you can use the questionnaire number) so that you can place it in the original context if required.

How you will categorize qualitative data depends on the types of data requested.

In the case of data on opinions and reasons, there may be a limited number of possibilities. Opinions may range from (very) positive, neutral, to (very) negative. Data on reasons may require different categories depending on the topic and the purpose of your question.

Step2: To establish your categories, first read through the whole list of answers. The start giving codes (A, B, C, for example) for the answers that you think belong together.

Step3: Next try to find a label for each category "others", but that it should be as small as possible, preferably containing less than five percent of the total answers.

If you categorize your responses to open-ended questions in this way you can:

- Report the percentage of respondents giving reasons or opinions that fall in each category; and
- Analyze the content of each answer given in particular categories, to plan what actions should be taken (e.g. for health education).

Questions that ask for descriptions of procedures, practices, and beliefs/knowledge are usually not meant to be quantified (although you may quantify certain aspects of them). The answers rather form part of a jigsaw puzzle that you have to put together carefully. When you are analyzing questions of this type you may find it useful to list and categorize responses.

15.3 Group Exercise (Time: 15 minutes)

■ Small Group Discussion

The training facilitator should divide randomly all the participants into smaller groups consisting of five to eight people in one group. Participants need to prepare the plan for data processing and analysis, considering the following points.

- Quality control of data (2 minutes): What quality checks should be made? Who will do them? When?
- Processing of data (3) minutes: How do you process your data? (by hand or by computer), How do you prepare the data master sheets, How many open-ended questions do you have that require categorizing or coding? Who will do the categorizing or coding? How much time will be required for data processing (taking into account the sample size)?
- Analyzing the data (5 minutes): Using the specific objectives and the list of variables, prepare dummy tables in which you relate variables to each other to analyze possible (causal) relationships. Select the dummy tables that you plan to fill in before we have our workshop on data analysis and reporting. Make estimate of the time and materials required for the analysis.
- Prepare to present in plenary your master sheet, dummy tables, a list of other important variables that you would like to cross-tabulate and rough estimates of human resources, time, and materials required for the analysis of data (5 minutes).

MODULE 16

Plan for Research Project Administration, Monitoring and Utilization of Results

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Define meaning of research project administration and its importance,
- (b) Define the meaning of research project monitoring and its importance,
- (c) List the responsibilities of the principal investigator related to the administration and monitoring,
- (d) Prepare a brief plan for administration and monitoring of the research project,
- (e) Prepare a plan for actively disseminating and fostering the utilization of research results to stakeholders and community people and
- (f) Prepare a plan for ethical approval process from IRC or ERB or both.

Time Frame: 45 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Brainstorming, Plenary session, Assessment/Presentation and Discussion

Course Contents

- a. Meaning of Research Project Administration and its Rationale
- b. Meaning of Research Project Monitoring and its Rationale
- c. Planning for the Utilization and Dissemination of the Research Results to Stakeholders and Community People
- d. Planning of Ethical Approval Process from IRC or ERB

Group Exercise

- Small Group Discussion

16.1 Meaning of Research Project Administration and its Rationale (Time: 5 minutes)

Facilitator should ask "what is project administration?"

Project administration is the term for all the activities involved in managing the human, material, financial and logistical resources of a project.

It allows for orderly and accurate purchase and procurement of equipment, payment of bills, and preparation of financial reports, and researchers to foresee the need for and to make timely requests for resources in order to avoid unwanted breaks in the implementation of the project, and to devote most of their time to the technical and scientific aspects of the project.

What would the tasks of the team leader, related to project administration, include?

- Supplying the project administrator or the administrative team with a copy of the research proposal and making sure they understand the work of the researchers and when funds are needed.
- Delegating selected administrative tasks to other members of the research team.
- Alerting administrative officials in a timely fashion concerning staff, materials, equipment and funds needed during various stages of the project.
- Supervising the flow of funds, project accounting and preparation and submission of financial reports.
- Discussing with the relevant authorities in the NHRC.

What administrative operations need to be supervised by the team leader at the end of the project?

- Working with project administration to plan for 'end of project' activities, such as arranging for termination or transfer of staff, making an inventory of supplies and equipment and dispensing them, if required, and arranging for any final payments and financial accounting.
- Overseeing the preparation and distribution of the final administrative/financial report.
- Making sure that all financial and project obligations are met.

16.2 Meaning of Research Project Monitoring and its Rationale (Time: 5 minutes)

Power point presentation, Brainstorming, plenary session and Discussion

Facilitator should ask “what is project monitoring?”

It is the on-going process by which information is gathered concerning the implementation and evolution of the research project. Monitoring involves activities designed to keep track of resources available and used and the quantity and quality of the operations carried out during each phase of the project so that its objectives will be met.

Monitoring should continue throughout the project and be organized so that it is helpful in alerting staff to problems that develop and changes needed. It is a valuable management and learning tool for everyone concerned.

During monitoring sessions you will review:

- The resources needed for the project, including staff, equipment, supplies, logistical support and funds, to assess if they are available when needed and being appropriately used;
- The activities of each team member and their relations to the project as a whole, to assess if the work plan is being carried out as planned and what delays or difficulties, if any, have emerged that need to be addressed;
- The flow and quality of the data that are being collected; and to what extent they meet the objectives or answer the research questions; and
- The research team's communication and co-ordination with the study population, other collaborating groups, and funding authorities.

Note: Monitoring will usually take place at team meetings during field activities. If there is a gap in the fieldwork, it may be necessary to convene a special meeting. It is advisable to keep close track of changes in the work plan and problems encountered and solved (or not solved) so that you can inform your facilitator and superiors, and include this information in your preliminary report.

16.3 Planning for the Utilization and Dissemination of the Research Results to Stakeholders and Community People (Time: 15 minutes)

It is important to plan out how the results of the proposed study will be utilized. The fundamental reason for undertaking health research is to obtain results that can be used to improve health and health care in the country. Depending on the selected topic, the results may be useful to the community, staff and managers of health and health-related services and to researchers and donor agencies, as well as others. Even negative results are important as they still add to the body of knowledge on a given topic.

Strategies to be followed to ensure that the results of the proposed study will be used:

- (a) Relevant authorities, staff and community members should be involved in the proposed research project during research problem selection and design phase.
- (b) List two or three expected major recommendations to obtain from the proposed study and identify who should be involved in their implementation. In this case, we must distinguish between two categories of people who should be involved (i) stakeholders (who has the authority to implement the recommendations), and (ii) partners in the implementation process.

***Note:** Sometime, we may need the approval of our superiors and/or of decision-makers from other sectors. Some authorities may merely need to give their approval, but we may need the active collaboration of others during the application of the results. Furthermore, we will need to identify from which colleagues, subordinate staff and target groups in the community co-operation will be required for the formulation and implementation of the study's recommendations.*

- (c) Identify which communication channels already exist which can be used to discuss and disseminate results. Channels for discussing and disseminating results may include, for example: **(i)** village or district development team meetings; **(ii)** village or district development health team meetings; **(iii)** staff meetings; **(iv)** mobile clinics or other health activities carried out in villages included in the study; and **(v)** meetings of village health committees.

***Note:** We should keep relevant parties informed of progress during implementation of the study and plan to obtain their input when study findings and recommendations are being drafted.*

- (d) Determine what written materials should be prepared to keep relevant parties informed. They may include **(i)** a one to two page summary of the project proposal that includes details on expected results, to distribute when we introduce the project to policy makers and staff concerned. **(ii)** an introductory statement to use with interview guides and questionnaires, explaining to informants the purpose and procedures of the study, as well as expected results. This introduction could also be used when we introduce the project to policy makers in the village. **(iii)** a progress report of four to five pages, including preliminary findings and recommendations, which you will prepare for presentation of the data analysis and report writing workshop. This report can also be used to inform authorities that will be crucial to utilization of project results. For community people, local language should be used.
- (e) The summary of the draft report of findings and recommendations can be used for discussion with policy makers and staff. However, to obtain feedback from decision makers and target groups in the community, we will need a different summary, concentrating in simple words on the findings and preliminary recommendations that directly concern them.

***Note:** Make sure that summaries of our findings and preliminary recommendations are adapted to the level of understanding and interests of different audiences. This will increase their motivation to provide thorough feedback and to participate in the implementation of the final recommendations collectively agreed up on.*

- (f) Sometime additional actions might be necessary to discuss the study results with all parties concerned and obtain their input, approval and co-operation for the implementation of the recommendations. These may include, for example: **(i)** special visits to top policy maker(s) by the team leader or the whole research team to report on progress during the fieldwork and/or to discuss preliminary results and recommendations, **(ii)** the invitation of the most crucial persons for implementation of our recommendations to the last day of the data analysis workshop, when we will present our preliminary findings and recommendations in plenary for discussion. **(iii)** special discussions with policy makers, staff and representatives of the target groups concerned to finalize the findings and recommendations of the study and develop a plan for action.

Note: For complex studies of relatively long duration, it may be advisable to have a project advisory committee, representing the major parties involved. Since the projects developed during workshops will in general not last longer than six months, we may be able to keep key individuals or representatives informed through ad hoc or even routine meetings.

16.4 Planning of Ethical Approval Process from IRC or ERB (Time: 5 minutes)

Facilitator should ask “who will give ethical approval to conduct the research study?”

Institutional ethical review committee at institutional level and NHRC at national level are the authentic organizations play a vital role to provide ethical permission to conduct the health research in Nepal. They actually govern whole research process to be implanted at the field settings, and ensure that the study protocol respects and meets the country’s national ethics code.

Research team needs to download the NHRC form (www.nhrc.org.np) and try to fill in for submission for ethical approval. Submission of research proposal should be done at least three months before the actual date of starting the research project. The team should maintain the harmony with the NHRC personnel for rapport building and then the proposal needs to be formally submitted to NHRC. If there will be any sort of questions and comments during reviewing process, the team should send its reply as early as possible. There should be a budgetary provision while submitting the proposal towards NHRC. Based on which NHRC will charge a fee (3 percent of the total budget that is appeared in the proposal) for approval process.

Similarly, research team needs to apply for ethical approval from institutional review committee (if required).

16.5 Group Exercise (Time: 15 minutes)

■ Small Group Discussion

The training facilitator should divide randomly all the participants into smaller groups consisting of five to eight people in one group. They need to develop a plan for administrating and monitoring the project, considering the following points:

Administration

Who will be the team leader for your project?

Which organizational unit or which official would be the best able to administer the project? (Remember that the team leader cannot also be the project administrator)

Which authorities are likely to fund the project?

How can a smooth flow of funds be assured?

Who will do the project accounting and file and submit receipts?

Monitoring

What aspects of the project will be monitored and who will be responsible?

How will the monitoring activities be organized and when will they take place?

Prepare a summary if your plan for administration and monitoring on a flip chart for presentation in plenary and compose a short written description for inclusion in your project proposal.

MODULE 17

Preparation of Budget

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Describe the rationale of budget preparation,
- (b) Describe the key points during budget preparation and its format and
- (c) Illustrate how to write budget justification.

Time Frame: 45 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Assessment/Presentation, and Discussion

Course Contents

- a. Rationale of Budget Preparation
- b. Budget Preparation and Its Format
- c. Budget Justification

17.1 Rationale of Budget Preparation (Time: 10 minutes)

Facilitator should ask “What are budgets and why do we need to design a budget?”

Budgets are basically work plans translated into financial terms. Thus if work plans have been properly prepared, the budgeting process is greatly simplified. A detailed budget will help us to identify which resources are already locally available and which additional resources may be required. The process of budget design will encourage us to consider aspects of the work plan we have not thought about before and will serve as a useful reminder of activities planned, as our research gets underway. A complete budget is not prepared until the final stage of project planning. However, cost is usually a major limiting factor and therefore must always be kept in mind during planning so that research proposals will not have an unrealistically high budget. We must have to remember that both ministries and donor agencies usually set limits for research project budgets. The use of locally available resources increases the feasibility of the project from a financial point of view.

17.2 Budget Preparation and Its Format (Time: 20 minutes)

It is necessary to use the work plan as a starting point. It is necessary to specify, for each activity in the work plan, what resources are required. For each resource needed, the unit cost and the total cost need to be determined.

For Example: In the work plan of a study to determine factors affecting mortality in the District X, it is specified that 5 research team members will each visit 20 households, one per working day, as 100 households of deceased people will need to be visited. With two drivers this amounts to 50 working days per driver. Each research team member will be accompanied by one of the research assistants. The budget for the fieldwork component of the work plan will include funds for personnel, transport and supplies.

Note: That unit cost (e.g., per diem or cost of petrol per km), the multiplying factor (number of days), and total cost are required for all budget categories.

Example of a budget costs involved in fieldwork for a mortality study

| SN | Category | Unit Cost (NRs) | Multiplying Factors | Costs (NRs) |
|-----------------------------|--|-------------------|---------------------|----------------|
| I | Allowances | | | |
| | Researchers (5) | | | |
| | Training Research Assistants | 800 per day | 5 x 3 = 15 days | 12,000 |
| | Field work during pretesting | 1200 per day | 5 x 2 = 10 days | 12,000 |
| | Field work during actual study | 1200 per day | 5 x 20 = 100 days | 120,000 |
| | Research Assistants (5) | | | |
| | Training | | | |
| | Field work during pretesting | 500 per day | 5 x 3 = 15 days | 7,500 |
| | Field work during actual study | 800 per day | 5 x 2 = 10 days | 8,000 |
| | Secretary (1) | 800 per day | 5 x 20 = 100 days | 80,000 |
| | Typing questionnaire | | | |
| | Finalizing report | | | |
| | Typing and sending circular | 500 per day | 1 x 5 = 5 days | 2,500 |
| | Typing and sending invitations | 500 per day | 1 x 5 = 5 days | 2,500 |
| | Drivers (2) | 500 per day | 1 x 2 = 2 days | 1,000 |
| | Field work during pretesting | 500 per day | 1 x 1 = 1 day | 500 |
| | Field work during actual study | | | |
| Facilitator (1) | 500 per day | 2 x 5 = 10 days | 5,000 | |
| Evaluation pretest | 500 per day | 2 x 50 = 100 days | 50,000 | |
| | 800 per day | 1 x 2 = 2 days | 1,600 | |
| Sub-total (I) | | | | 302,600 |
| II | Transport Cost | | | |
| | Field work during pretesting (10 cases, 50 km per site) | 25 per km | 500 km | 7,500 |
| | Field work during actual study (100 cases, 50 km per site) | 25 per km | 500 km | 7,500 |
| | Travel cost for facilitator | 25 per km | 500 km | 7,500 |
| Sub-total (II) | | | | 22,500 |
| III | Supplies | | | |
| | Stationary | | | 5,000 |
| | Refreshment during training | | | 20,000 |
| Sub-total (III) | | | | 25,000 |
| Total (I + II + III) | | | | 350,100 |
| 5% Contingency | | | | 17,505 |
| Sub-Grand Total | | | | 367,605 |
| 3% NHRC fee | | | | 11,028 |
| Grand Total | | | | 378,633 |

If more than one budget source will be used (e.g., the MoHP and a donor), it would be useful to indicate in the budget which source will pay for each cost. Usually a separate column is used for each funding source. The MoHP may, for example, provide salary costs and operational costs for vehicles, whereas the donor agency is asked to provide per diem (according to local regulations), petrol/public transport expenditures and stationary.

The type of **budget format** to be used may vary depending upon whether the budget will be supported by your own organization or submitted to the MoHP or a donor organization for funding. Most donor organizations have their own special project forms, which include a budget format. If you intend to seek donor support it is advisable to write to the potential funding organization as early as possible during the period of project development.

Tips on budget preparation

- Include a five percent contingency fund if you fear that you might have budgeted for the activities rather conservatively (If inclusion of a contingency fund is not allowed, an alternative is to slightly over-budget in major categories).
- Do not pack yourself in too tightly with very detailed categories and amounts, especially if regulations do not allow adjustments afterwards. Ask the supervising agency to agree that, if necessary, there may be some transfer between 'line items' in the budget.
- If government agency has agreed to contribute a certain amount for the project, try to arrange that the contribution be administered separately, so that the administrators remain aware of the commitment. This may also ensure easier access to the funds.
- Do not forget to calculate three percent NHRC fee from the total project cost as this fee needs to be given to NHRC during ethical approval process.

17.3 Budget Justification (Time: 15 minutes)

It is not sufficient to present a budget without explanation.

The budget justification follows the budget as an explanatory note justifying briefly, in the context of the proposal, why the various items in the budget are required. It is essential to provide clear explanations concerning why items that may seem questionable or that are particularly costly are needed and discuss how complicated expenses have been calculated. If a strong budget justification has been prepared, it is less likely that essential items will be cut during proposal review.

How can budgets be reduced?

- When possible, use local rather than outside personnel. If consultants are needed at the beginning, train local personnel as soon as possible to take over their work.
- Explore the use of students or community volunteers, where appropriate.
- Plan for strict control of project expenditures, such as those for vehicle use, supplies, etc.

Obtaining funding for projects

To conduct research, it is usually necessary to obtain funding for the research project. Such funding may be available from local, national or international agencies. In addition to preparing a good research proposal, the following strategies are useful for researchers who need to obtain their own funding:

- Familiarize yourself with the policies and priorities of funding agencies. Such policies and priorities may be:
 - ◆ Explicit, i.e., available from policy documents issued by the agency.
 - ◆ Implicit, i.e., known to officials in the agency and to other local researchers who have previously been funded by that agency.

Obtain the names of such persons and make direct contact with them.

The funding policies of many agencies may emphasize:

- ◆ A priority given to research aimed at strengthening a particular program (e.g. HIV/AIDS, PHC, Child Health)
- ◆ Institution building (i.e., building the capacity of an institution to do research)
- ◆ Research credibility

- Identify the procedure, deadlines, and formats that are relevant to each agency
- Obtain written approval and support from relevant local and national health authorities and submit this together with your proposal.
- If you are a beginning researcher, associate yourself with an established researcher. Host agencies scrutinize the 'credibility' of the researcher to whom funds are allocated. Such credibility is based on previous projects that have been successfully completed.
- Build up your own list of successfully completed projects (i.e., your own reports, publications, etc.).

Note:

Personnel costs: It is the cost for personnel time spent on the project by individuals not employed on a regular salary. This fund should reflect actual labor costs.

Supplies: This cost relates chemicals, glassware, stationary, or other disposable items and other supplies to the number of procedures expected to be performed in the project.

Patient/participant costs: This cost relates to the time lost and/or actual transportation expenses. Costs for investigations and/or laboratory procedures may be included in the budget proposal if they are not a part of the routine medical care for the study participants and are performed only for the sake of the project. The costs should not exceed the local fees normally charged for such tests.

Minor equipment: Only requests for minor equipment are generally considered and must be fully justified.

Local travel of project personnel: This is the travel expenses (local per diem) of personnel involved in the study. Here, vehicles cannot normally be provided as part of project support, although vehicle rental can be considered.

Other costs: If the study needs to have additional support such as investigators' meetings, training workshops and external consultant inputs, this should be under this budget item. Data analysis costs, costs of printing or photocopying forms, mail, telephone and fax charges, etc., should also be specified and justified under this item. It is necessary to justify the amounts stated under each budget item. It is important to relate the total budget to the scope of the project or number of participants to be included in the study. Good justification of the budget makes the donors difficult to reduce it.

MODULE 18

Field Work Activities

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Prepare field work manuals,
- (b) Train interviewers/data collectors and
- (c) Demonstrate ethical aspects of the research during data collection phase.

Time Frame: 45 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Assessment/Presentation, and Discussion

Course Contents

- a. Preparing Field Work Manuals
- b. Training Interviewers/Data Collectors (includes training objectives)
- c. Ethical Consideration (how to use Informed consent forms)

18.1 Preparing Field Work Manuals (Time: 15 minutes)

Facilitator should ask “why do we need to prepare field work manuals?”

Manuals or instruction sheets should be prepared for:

(a) **Interviews:** The manual for interviews should have instructions concerning the (i) purpose of the study, (ii) role of the interviewers, (iii) way interviewers should introduce themselves to informants, consent forms, (iv) interview techniques, and (v) interview guide / questionnaire, wherein following things need to be known:

- Its general format,
- Clarification of terms and what the research units are (e.g., household, family, respondent),
- instructions regarding how to ask complicated questions (e.g., whether to mention pre-categorized answers or not and whether to probe for more than one answer or not),
- Instructions concerning how to fill in answers (e.g., the need to write answers to open-ended questions using the words of the informants),
- Use of the map (if any), and
- Sampling procedures (and what to do if informant is absent, etc.)

(b) **Other data collection techniques:** Guidelines should be prepared for the implementation of any FGDs and interactive or projective research techniques that will be used, so that all members of the research team, including research assistants, will follow the same approach.

There should be guidelines concerning any measurements that will be made, including instructions on:

- What to measure and how, and
- How to properly calibrate measuring instruments.

(c) **Supervision:** In addition to all instructions given above, the manual should include a separate section on supervision, with directions, for example, on:

- Maintaining a record of attendance of research team members
- Safe-keeping of data and records
- Recording the number of interviews/FGDs/observations, etc., completed each day
- Ensuring the quality control of field work
- Dealing with non-responses and incomplete interviews, and
- Reporting progress at specific intervals, to superiors and/or funding agencies.

18.2 Training Interviewers/Data Collectors/Research Assistants/Research Supervisor (includes training objectives) (Time: 15 minutes)

All the interviewers/data collectors/research assistants who join just before the pre-test, must be given explicit training. They should not only be able to collect data properly but also understand other procedures such as the selection of sampling units, map reading and data handling. They may also be involved in the pre-test and in the adjustment of instruction sheets and data collection tools after the pre-test.

The training program usually consists of:

- Discussion on the objectives and methodology of the study,
- Reading of manuals or instruction sheets prepared for the study,
- Research ethics and data quality,
- Interview training,
- Field experience, and
- Discussion on data-collection tools and instruction sheets and how they need to be adjusted (based on field-testing).

These all should be trained together with the whole team, including possible additional research supervisors.

Plan out to conduct the **pre-test** in the research location, with preliminary data analysis and revision of data collection tools. The pre-test should assess the validity of the data-collection instruments and procedures, as well as the sampling procedures. Module 15 should be re-read before planning your pre-test. There should be an arrangement made for your facilitator to visit during the training of interviewers and pre-test. The study may involve the use of a variety of methods of data collection such as (i) collection of data from recorded sources, (ii) face-to-face interviews using interview guides/questionnaires, (iii) FGDs, and (iv) measurements or observations.

There should a plan to pre-test all your methods including analysis of the data you will collect during the pre-test. Finalize and fill in master sheets, including quantitative as well as qualitative data (using key words). Fill in some of the cross-tables. This process will help you make a realistic assessment of the entire data collection and analysis process and will invariably lead to revisions of some of the tools.

The pre-test should identify scientific as well as logistical problems and constraints. Discuss these with your facilitator.

Revise the data-collection and data analysis tools and procedures after the pre-test. Arrange for typing and copying or duplicating of the tools. Check all forms for accuracy before duplicating. Make sure that sufficient materials and human resources are available for this process. If a computer will be used for analysis, prepare a coding manual.

Having obtained permission for the study, and having (i) obtained the necessary resources, (ii) trained the team members, (iii) organized the logistics, and (iv) pre-tested and modified the data collection tools and procedures, the data collection can now be carried out.

18.3 Ethical Consideration (how to use Informed consent forms) (Time: 15 minutes)

In order to undertake the biomedical research involving human participants, all the investigators must obtain the informed consent from the prospective participants.

What is informed consent? How it is obtained?

Informed consent is a process which involves various steps before the participant actually agrees and signs the consent form in writing to the researcher. The following principles must be applied to obtain the informed consent from the study participant.

- *Information:* The participant must be provided with the full information regarding the research by the researcher including the information regarding procedures, purpose of research, anticipated risks, benefits, alternative procedures, opportunity to ask questions and with draw any time without any fear or negative consequences.
- *Comprehension:* It is the responsibility of the researcher that participant understands all the information provided, has understood and he is able to comprehend. If the study participant is not able to comprehend in case of vulnerable population, or incompetent, researcher must obtain the proxy consent in presence of witness or authorized representatives.
- *Voluntariness:* Informed consent is valid only if it is given voluntarily without any coercion, biases, or influences and the participant understand all the consequences.
- *Obtaining the consent or signature and documentation of informed consent:* Researcher must obtain the signature in writing (or written consent) from the participant and this should be well documented and provided one copy to the participant (if demanded). The consent form includes the signature of the participant as well as signature of the study team or his/her representative. In case the participant is not able to provide consent, proxy consent is obtained in writing from the legal representative/guardian.

Note: All research which requires human participation needs approval from ethics review committee. Therefore, all research proposals must comply with the guidelines of ethics committees. The ethical guidelines of NHRC or IRC of different institutions should be followed while finalizing the research proposals.

MODULE 19

Work Plan

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Define meaning of work plan and its importance and
- (b) Describe the techniques of work scheduling and planning.

Time Frame: 45 minutes

Materials: Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Assessment/Presentation, and Discussion

Course Contents

- a. Meaning of Works Plan and its Rationale
- b. Key Work Scheduling and Planning Techniques

19.1 Meaning of Work Plan and its Rationale (Time: 5 minutes)

Facilitator should ask “what a work-plan is, and why it is important?”

It is a schedule, chart or graph that summarizes, in a clear fashion, various components of a research project and how they fit together and will be implemented in a coherent way within a specific time-span.

It may include:

- The tasks to be performed,
- When and where the tasks will be performed, and
- Who will perform the tasks and the time each person will spend on them.

19.2 Key Work Scheduling and Planning Techniques (Time: 40 minutes)

Facilitator should ask “what is a work-schedule?”

It is a table that summarizes the tasks to be performed in a research project, the duration of each activity and who is responsible for the different tasks (staff responsibilities).

The version of a work schedule given on the following page includes:

The tasks to be performed;

The dates each task should begin and be completed;

Research team, research assistants and support staff (drivers, typists) assigned to the tasks; and Person-days required by research team members, research assistants and support staff (the number of person-days equals the number of working days per person)

This work schedule was developed for a study of factors contributing to low utilization of ART services in a certain region. The research team consisted of four persons (mainly regional health team members). The study consisted of two main parts: (1) analysis of the ART records to assess the percentage of service users and the regularity with

which they use the services, and interviews with staff responsible for the services; and (2) interviews with female users of services (sampled from the records) and non-users, and interviews with husbands of female users of ART and of non-users.

Example of Work Schedule

| Tasks to be performed | Dates | Personnel assigned to task | Person days required |
|---|------------------------------|---|--|
| Finalize research proposal and literature review | Week 1-3, 4-24 April | Research Team (4) | 4 x 3 = 12 days |
| Ethical Clearance from NHRC and IRC (e.g. funding authorities) | Week 1-5, 4 Apr-8 May | Principal Investigator | |
| Clearance and orientation of local authorities | Week 6 9-15 May | Principal Investigator (1) Driver (1) | 2 days 2 days |
| Compilation of ART records and interviews of service staff | Week 6-9 9 May–5 June | Data Recorder (1) Driver (1) | 10 days 10 days |
| Analysis of ART records and sampling study units | Week 10 6-12 June | Research Team (4) | 4 x 2 = 8 days |
| Training of research assistants and field testing questionnaire | Week 11 13-19 June | Research team (4) Research Assistant(s) (5) Facilitator (1) | 4 x 3 = 12 days 5 x 3 = 15 days 1 x 4 = 4 days |
| Interviews in community | Week 12-13 20 June-3 July | Research Team (4) Research Assistants (5) | 4 x 10 = 40 days 5 x 10 = 50 days |
| Preliminary data analysis | Week 19-22 8-28 Aug | Research Team (4) Research Assistants (5) Facilitator (1) | 4 x 7 = 28 days 5 x 1 = 5 days 1 x 2 = 2 days |
| Feedback to local authorities and district health teams | Week 27 3-9 Oct. | Research Team (4) Driver (1) | 4 x 1 = 4 days 1 x 1 = 1 day |
| Feedback to communities | Week 28 10-16 Oct | Research Team (4) Driver (1) | 4 x 1 = 4 days 1 x 1 = 1 day |
| Data analysis and reporting workshop | Week 29-30 17-30 Oct | Research Team (4) Facilitator (1) | 4 x 10 = 40 days 1 x 10 = 10 days |
| Report finalization | Week 31-34 31 Oct-28 Nov | Research Team (4) Secretary (1) | 4 x 2 = 8 days 1 x 5 = 5 days |
| Monitoring research project | Continuous | Research team (4) | 4 x 1 = 4 days |

How to develop a work schedule?

Review and revise, if necessary, the list of tasks you prepared for your plan for data collection. Add to the list other tasks you must complete not related to data collection (such as clearance of proposal; data analysis and report writing; and feedback to authorities and target group). Number all tasks. Now review the staffing for the different tasks, taking into account your experience during the pre-test.

Consider:

- Who will carry out which tasks?
- The amount of time needed per research unit (interview/observation/record) including travel time; and
- The number of staff needed to complete each task in the planned period of time.

Make revisions, if required. Complete the staffing for the tasks you have just added.

Consider whether the use of short-term consultants is necessary for certain tasks. Always consider using local consultants. If consultants are used, involve them in the planning stage of the project so you can incorporate any useful suggestions they may have concerning the design of the methodology.

In reviewing your tentative staffing plan you should ask:

- Are the types of personnel and levels of expertise you require likely to be available for the project? For example, is there a sufficient range of disciplines available including, where appropriate, personnel from outside the health field?
- If special staff has to be recruited or reassigned from other agencies, what regulations or procedures will have to be followed?
- Is the staffing plan realistic, taking into account the project budget that is likely to be available?
- Is the sufficient logistics available?
- To what extent can community members, students or other non-professionals be involved in the study?
- What training would the research assistants/data collectors require? How long would the training last? Who would do the training? How do you intend to supervise the assistants/data collectors? Review what you have tentatively planned in data collection and revise it, as necessary. Then fix the dates (in weeks) indicating the period in which each task will have to be carried out and calculate the number of working days per person required to complete each task.

The GANTT Chart

It is a planning tool that depicts graphically the order in which various tasks must be completed and the duration of each activity.

The GANTT chart shown below indicates:
The tasks to be performed;
Who is responsible for each task; and
The time each task is expected to take.

The length of each task is shown by a bar that extends over the number of days, weeks or months the task is expected to take.

How can a work plan be used?

A work plan can serve as:

- A tool for planning the details of the project activities and drafting a budget.
- A visual outline or illustration of the sequence of project operations. It can facilitate presentations and negotiations concerning the project with government authorities and other funding agencies.
- A management tool for the team leader and members of his or her team, showing what tasks and activities are planned, their timing, and when various staff members will be involved in various tasks.
- A tool for monitoring and evaluation, when the current status of the project is compared to what had been foreseen in the work plan.

When should the work plan be prepared and when should it be revised?

The first draft of the work plan should be prepared when the project proposal is being developed, so the schedule can be discussed easily with the relevant authorities.

A more detailed work plan should be prepared after the pre-test in the study area.

There should be no hesitation in revising work plans or preparing new ones after the project is underway based on a reassessment of what can be realistically accomplished in the coming months.

What factors should be kept in mind when preparing a work plan?

- It should be simple, realistic, and easily understood by those directly involved.
- It should cover the preparatory and the implementation phases of the project, as well as data analysis, reporting, dissemination and utilization of results.
- The activities covered should include training, technical or research tasks; administrative, secretarial and other support tasks.
- The realities of local customs (local holidays, festivals) and working hours should be considered, when preparing the work plan.
- Also seasonal changes and their effect on travel, work habits, and on the topic you are studying (such as incidence of disease or nutritional status), should be kept in mind as the schedule is planned.

Note: *The work plan is the starting point for developing your budget. Specify, for each activity in the work plan, what resources are required. Determine for each resource needed the unit cost and the total cost.*

MODULE 20

Preparing a Report

Learning Objectives:

By the end of the session, the participants will be able to:

- (a) Understand the framework of preparing preliminary research report,
- (b) Able to conceptualize the meaning of references and write it and
- (c) Demonstrate the general preparation of Annex.

Time Frame: 45 minutes

Materials: Post-test Questionnaires, Flip Chart, Board Markers, Computer, Audiovisual Equipments with LCD Projector and Screen

Teaching Methods/Process: Lecture, Brainstorming, Assessment/Presentation, and Discussion

Course Contents

- a. Contents of Report
- b. Writing References
- c. Annex Preparation

Class Exercise

- Question and Answer

20.1 Contents of Report (Time: 10 minutes)

Facilitator should ask “why should you prepare a report that summarizes your fieldwork experiences, observations, and preliminary conclusions?”

This will help you to:

- Get a clear overview of the data collected (both qualitative and quantitative), your field observations and impressions and consider how different sets of data work together to answer the research questions implied in your objectives,
- Assess how well your research project was designed and thus the extent to which you can provide valid information to help solve the problem you investigated,
- Develop the general approach you will use in reporting your findings and drawing conclusions, and
- Allow the facilitators and the other groups to provide you with feedback that will help you to identify what further analyses to make and how to organize the final report.

Note: Report is a statement of the results of an investigation or of any matter on which definite information is required.

What information should be included in the report?

- A review of your fieldwork experiences, and
- A summary of findings

Fieldwork experience:

Review your fieldwork experience and evaluate how well you were prepared technically (in terms of the methodology developed in your research proposal) and organizationally (work plan, budget, and administrative procedures). Summarize your experience and your evaluation of it in a most two pages. Address questions such as those posed below:

General:

How did you function as a group? Were all group members active?

Did you lose any members? Did you recruit any new members?

What procedures did you follow to obtain permission/consent for the research?

Did you manage to obtain the research assistants, equipments, transport, and financial support needed?

Were the resources you budgeted sufficient?

Technical preparations:

What did you do to train your research assistants? Were and how did you do your pretest? How long did it take?

Were any major revisions of the data-collection tools and research procedures necessary?

Fieldwork:

Did you do your sampling the way you had originally planned? Did you obtain the information and cooperation you wanted? How does your planned sample size compare with the actual sample collected? How many interviews did you conduct? How many refusals? How many replacements? How many records were analyzed? Were your data-collection tools adequate? Did they provide you with the information you wanted? Were you able to follow your work plan? Did you correctly estimate the human resource and time needed to collect the data?

Technical support: Did you receive support from your facilitator/resource person? In what phases of the fieldwork? Was the support timely? Was it sufficient or would more support have been helpful?

Findings:

When presenting research findings:

- First of all, get an overview of all the data you collected.
 - Review any record forms or checklists you've completed. Has all the data you wanted to obtain been collected?
 - Review your master sheets or any computer out prints available. Are they complete?
 - List the answers to open-ended questions.
- Write down results from:
 - FGDs (if conducted)
 - Interviews with key informants,
 - Laboratory investigation, and
 - Field observations.
- Re-read the plan for data analysis in your research proposal. Review the analysis of data you conducted during the pretest in the field. You may have done some useful ground work for data analysis that can be used now as you prepare your findings.
- Re-read you statement of the problem and the objectives.
 - Take the specific objectives as a starting point. Brainstorm as a group on the data your have collected and to what extent appear to answer the research questions implied in your objectives.
 - Consider not only the quantitative data from record forms and relevant sections of your questionnaires, but also qualitative data and relevant observations you made or impressions you gained during the fieldwork.
 - Discuss whether (and how) the data from various sources complement or contradict each other. Record the details of these discussions. This will help you structure the report you are going to write, keeping focused on major issues, but not forgetting relevant information.

- o Analyze the dependent variables that further describe the nature, size, and distribution of your problem and make a brief summary.
- o Prepare (at least) two tables for each objective, showing how crucial independent variables relate to dependent variables (review the dummy tables you prepared when developing your research proposal and determine which of them you can use). If you have mainly untabulated qualitative data, just summarize how crucial parts of the data you collected will answer the questions implied in your specific objectives.

Basic Contents of the Report

- Research Title
- Acknowledgement (only those who have contributed for the study)
- Abbreviations
- List of Tables / Figures / Photographs
- Abstract (*should cover little background, main objective, method, result and conclusion only, not discussion*)
- Introduction (*Backgrounds, Statements of Problem and its Justification or Rationale*)
- Objectives (General and Specific)
- Methodology (Materials & Methods) (*needs to be written in past tense*)
- Results (*needs to be written in past tense in most of the cases*)
- Discussion (*needs to be written in present tense*)
- Conclusions (*needs to be written in present tense*)
- Recommendations and Policy Implications (*needs to be written in future tense*)
- References (*Vancouver or Harvard style of writing*)
- Annexes (*Data collection forms, Informed consent forms etc.*)

After writing the report, ask yourself

- Is the information you present CORRECT?
- Is it COMPLETE?
- Are your descriptions CONCISE?
- Are your explanations CLEAR?
- Are your conclusions CONVINCING?

20.2 Writing References (Time: 10 minutes)

Facilitator should ask “what is referencing and why it is needed?”

It is a standardized method of acknowledging sources of information and ideas that you have used in your assignment in a way that uniquely identifies their source. Direct quotations, facts and figures, as well as ideas and theories, from both published and unpublished works must be referenced. It is necessary to enable the reader to verify quotations and readers to follow-up and read more fully the cited author’s arguments.

What is citation?

It is the way you tell readers that certain material in your work came from another source. It also gives your readers the information necessary to find that source again, including **(i)** information about the author, **(ii)** the title of the work, **(iii)** the name and location of the company that published your copy of the source, **(iv)** the date your copy was published, and **(v)** the page numbers of the material you are borrowing.

Types of referencing

You always need to reference all the literature that you refer to in your review. When you use the **Vancouver** system, you will use consecutive numbers in the text to indicate your references. At the end of your paper or chapter (of a book) you will then list your references in numbering order (ascending). In your report the references will come before the annexes.

For an Article:

Author(s)' Surname followed by initials. Title of article. *Name of Journal*. Year,

Volume, (number): page numbers of article.

Example: Louria DB. Emerging- and Re-emerging infections: The societal variables. *International Journal of Infectious Disease*. 1996, 1(2):59-62.

For a Book:

Author(s)' Surname followed by initials. *Title of book*. Place: Publisher, Year, Edition

Example: Abramson JH. *Survey methods in community medicine*. Edinburgh: Churchill Livingstone, 1990, 4th ed.

For a chapter in a Book:

Author(s) of chapter (Surname(s) followed by initials). Chapter title. In: Editor(s) of book, (Surname(s) followed by initials). (eds). *Title of book*. Place: Publisher, year: page numbers of chapter.

Example:

Todd J and Barongo L. Epidemiological methods. In: Ng'weshemi J, Boerma T, Bennett J and Schapink D (eds). *HIV prevention and AIDS care in Africa; A district level approach*. Amsterdam: KIT Press, 1997: 51-68.

Alternatively, you can use the **Harvard** system and refer to the references more fully in the text, putting the surname of the author, year of publication and number(s) of page(s) referred to between brackets, e.g., (Shiva 1998:15-17). If this system of citation is used, the references at the end of the report should be listed in alphabetical order. In this case also the references will come before the annexes.

For an Article:

Author(s)' Surname followed by initials. Year of publication, Title of article. *Name of Journal*. Volume (number): page numbers of article.

Example: Louria DB 1996. Emerging- and Re-emerging infections: The societal variables. *International Journal of Infectious Disease*. vol 1(2):59-62.

For a Book:

Author(s)' Surname followed by initials. Year of publication, *Title of book*. Place: Publisher, Year, Edition

Example: Abramson JH 1990. *Survey methods in community medicine*. Edinburgh: Churchill Livingstone, 4th ed.

For a chapter in a Book:

Author(s) of chapter (Surname(s) followed by initials). Year of publication, Chapter title. In: Editor(s) of book, (Surname(s) followed by initials). (eds). *Title of book*. Place: Publisher, year: page numbers of chapter.

Example:

Todd J and Barongo L 1997. Epidemiological methods. In: Ng'weshemi J, Boerma T, Bennett J and Schapink D (eds). *HIV prevention and AIDS care in Africa; A district level approach*. Amsterdam: KIT Press, pp. 51-68.

When citing references within the **text**, we use only the name of the author, followed by the year of publication.

For example, "Larsen (1971) was the first to propound the theory", or "The theory was first propounded in 1971 by Larsen".

When directly quoting from another source, ensure that quotation marks are used and the relevant page number(s) are given.

For example, Larsen (1971, p.245) noted that "many of the facts in this case are incorrect", or "Many of the facts in this case are incorrect" (Larsen 1971, pp.245-6).

When a work by two or three authors (multiple authors) is cited in parentheses, the textual reference should be as

(Larsen & Green 1987) (Larsen, Green & Withers 1987)

When the authors' names are incorporated in the text, use 'and' as "Larsen and Green (1987) were unable....." or "Larsen, Green and Withers (1987) agreed.....". If the work has three to five authors, all of the authors are listed in the first citation.

For a work that has more than six authors, only the surname of the first listed author is used, followed by the expression 'et al.' (Latin phrase, which means "et" means "and" while "al" means "others"). For example, a work by Larsen, Green, Withers, Eastwood, David and Gonzales becomes: "Larsen et al. (1997) have found.....", and "..... is the best example (Larsen et al. 1987)". Only the first author's name is used with "et al" to show that there are more authors.

If relevant sources that are not cited in the text are included, the list is called a **bibliography** and this should be listed in alphabetical order at the end of report just before annexes.

***Note:** The Harvard author/date system of referencing seems easier, as you can change the order of paragraphs without consequences for your referral system. However at present, computers have programs that change the numbers of your references automatically if you reshuffle the text while using the Vancouver system.*

20.3 Annex Preparation (Time: 5 minutes)

Facilitator should ask "what do you understand by the term annex?"

The word "annex" is derived from Latin word "annectere", which means "to connect" or "to bind". This simply means "an addition" to a main report.

All kinds of data collection tools (questionnaire, patient pro-forma, FGD guide, laboratory form, etc), ethical documents (informed consent format, ethical approval letter from NHRC, permission letter from the hospital, etc), training schedule before going for pre-testing, list of person along with their affiliated organization met during the study period, terms of reference (ToR) of the study, names of all the study team members including names of data collectors/assistance/facilitator need to be mentioned in the Annex.

Each and every annex should have its title heading and be in numbering order. Text should indicate these annexes as otherwise there is no meaning of putting annexes at the end. All the annexes should be appeared immediately after the references/bibliography.

20.4 Class Exercise (Time: 20 minutes)

■ Question and Answer

Facilitator should randomly ask some pertinent questions to all the participants:

1. Define research.
2. Why we need to conduct research?
3. What are the purposes of conducting research?
4. What are the types of research?
5. Can you say any research title in the field of HIV/AIDS research?
6. What are the steps of idea generation?
7. Where is the source of research idea?
8. How many type of research question are there?
9. What are the criteria of good research question?
10. Can you say any research question in the field of HIV/AIDS research?
11. What is the essential information need to be mentioned while defining researchable problem?
12. What are the criteria for prioritizing the researchable problem?
13. What are the general steps of analyzing the researchable problem?
14. What is information?

15. Why is it important to review already available information when preparing a research proposal?
16. What are the possible sources of information?
17. Where can we find these different sources?
18. What is the length of research title?
19. Why should research objective developed?
20. What is the basic difference between research methods and research methodology?
21. What is the basic difference between qualitative and quantitative methods?
22. Why is the qualitative approach particularly appropriate in the context of HIV/AIDS?
23. What is variable?
24. Why variable needs to be taken into consideration?
25. How many types of variables are there?
26. What do understand by exploratory study?
27. What is case study?
28. What are the characteristics of qualitative research?
29. What is cross-sectional descriptive study?
30. What is prevalence study?
31. What is longitudinal study?
32. What is incidence study?
33. What is the difference between prevalence and incidence rates?
34. What is IBBS?
35. What do you understand by biological measurement?
36. What do you understand by behavioral measurement?
37. What is surveillance?
38. What is the basic difference between tools and techniques?
39. What is observation and when is it appropriate?
40. What is interview and how it can be conducted?
41. What are the characteristics of good interviewers?
42. What is FGD and why is it important?
43. What is SOP?
44. What are laboratory safety practices?
45. What is research ethics?
46. What are basic ethical principles in health research?
47. What do you understand by the term "informed consent"?
48. What is sampling?
49. What do you understand by sampling frame?
50. What are the types of sampling methods?
51. Name some specific sampling techniques used in IBBS?
52. Why we need to think about sample size?
53. What are the factors that affect the sample size?
54. Why should you develop a plan for data collection?
55. What are the main stages need to be taken into consideration during data collection process?
56. What is data, and what do you understand by data management?
57. What is data processing?
58. What is data analysis?
59. What is pre-testing and why it is important to conduct?
60. When should we carry out a pretest?
61. What is a work-plan and why it is important?
62. What factors should be kept in mind when preparing a work plan?
63. What is project administration?
64. Who will give ethical approval to conduct the research study?
65. What are budgets and why do we need to design a budget?
66. Why do we need to prepare field work manuals?
67. What are the basic contents of preliminary report?
68. What is referencing and why it is needed?
69. How many types of referencing are there?
70. What is annex, and where should it be appear?

Facilitator should explain if they will give some sort of confusing answer.

Bibliography

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ANNEX – I

Pre-test and Post Test Questionnaire

Self-Assessment of Learning

1 = No knowledge

3 = Some knowledge

5 = A lot of knowledge

| Pre-test (Circle before starting the training) | | | | | SELF-ASSESSMENT OF YOUR KNOWLEDGE RELATED TO | Post Test (Circle after participating in the training) | | | | |
|---|---|---|---|---|--|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | Having knowledge of general meaning of research | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to generate Ideas for HIV and AIDS research and raising questions | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to identify and prioritize problems for HIV and AIDS Research | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to analysis and state the problem | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to review available literatures on HIV and AIDS | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to formulate research title and objectives | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Having knowledge of research methodology for conducting research on HIV and AIDS | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Having knowledge of variables and scales of measurements | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Having knowledge of simple descriptive study designs (includes only basic study types for HIV and AIDS research) | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Having knowledge of data collection tools and techniques | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Knowing sampling techniques and sample size calculation | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to plan the data collection process | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to manage research data | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Having knowledge of meaning of pretesting the data collection tools | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to prepare the work plan | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to plan for project administration, monitoring and utilization of results | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to prepare the budget | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to prepare the fieldwork activities | 1 | 2 | 3 | 4 | 5 |
| 1 | 2 | 3 | 4 | 5 | Able to prepare a preliminary report | 1 | 2 | 3 | 4 | 5 |

ANNEX – II

Daily Session Evaluation

Title of Session:

Please indicate your impression of the items listed below. If it is highly favorable, circle 9, and circle 1 for least favourable.

| C | Content | Low | | | | | High | | | | |
|-----------|---|---------------|---|---|----------------|---|-------------|--------------|---|---|--|
| C1 | The session met my expectations | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| C2 | Applicability of gained knowledge in my working area | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| C3 | Enhancement of knowledge | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| C4 | Clarity and usefulness of audiovisual materials (if presented) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| F | Facilitators | | | | | | | | | | |
| F1 | Presentation skills | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| F2 | Quality of theoretical instruction | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| F3 | Quality of examples given | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| F4 | Encouragement of class participation and interaction | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| F5 | Opportunity for raising the participants questions | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| F6 | Satisfaction with facilitators clarification on asked questions | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| F7 | Management of the class | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| F8 | Management of the group/class work (If conducted) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| O | Other questions | | | | | | | | | | |
| O1 | Session Length (Please indicate "✓" in the parenthesis) | Too short () | | | Just right () | | | Too long () | | | |
| O2 | Your recommendation to improve this session | | | | | | | | | | |
| O3 | Any other comments related to this session | | | | | | | | | | |

ANNEX - III

Overall Evaluation of Training

Please indicate your impression of the items listed below. If it is highly favorable, circle 5. If not so, favorable, give your opinion by circling from 4 to 1.

| M | Module Contents | Low | | | | | High |
|------------|---|------------|---|---|---|---|-------------|
| M1 | The training course orientation | 1 | 2 | 3 | 4 | 5 | |
| M2 | General introduction to research | 1 | 2 | 3 | 4 | 5 | |
| M3 | Ideas for HIV and AIDS research and raising questions | 1 | 2 | 3 | 4 | 5 | |
| M4 | Identifying and prioritizing problems for HIV and AIDS Research | 1 | 2 | 3 | 4 | 5 | |
| M5 | Analysis and Statement of the problem | 1 | 2 | 3 | 4 | 5 | |
| M6 | Review of available literatures on HIV and AIDS | 1 | 2 | 3 | 4 | 5 | |
| M7 | Formulation of research title and objectives | 1 | 2 | 3 | 4 | 5 | |
| M8 | Introduction to methodology for conducting research on HIV and AIDS | 1 | 2 | 3 | 4 | 5 | |
| M9 | Identification of variables and scales of measurements | 1 | 2 | 3 | 4 | 5 | |
| M10 | Study types (includes only basic study types for HIV and AIDS research) | 1 | 2 | 3 | 4 | 5 | |
| M11 | Data collection tools and techniques | 1 | 2 | 3 | 4 | 5 | |
| M12 | Sampling techniques and sample size calculation | 1 | 2 | 3 | 4 | 5 | |
| M13 | Plan for data collection | 1 | 2 | 3 | 4 | 5 | |
| M14 | Data management | 1 | 2 | 3 | 4 | 5 | |
| M15 | Pretesting the data collection tools | 1 | 2 | 3 | 4 | 5 | |
| M16 | Work plan | 1 | 2 | 3 | 4 | 5 | |
| M17 | Plan for project administration, monitoring and utilization of results | 1 | 2 | 3 | 4 | 5 | |
| M18 | Preparation of budget | 1 | 2 | 3 | 4 | 5 | |
| M19 | Fieldwork activities | 1 | 2 | 3 | 4 | 5 | |
| M20 | Preparing a report | 1 | 2 | 3 | 4 | 5 | |
| F | Facilitators | Low | | | | | High |
| F1 | Overall presentation skills | 1 | 2 | 3 | 4 | 5 | |
| F2 | Overall quality of theoretical instruction | 1 | 2 | 3 | 4 | 5 | |
| F3 | Overall quality of practical instruction | 1 | 2 | 3 | 4 | 5 | |
| F4 | Overall encouragement of class participation and interaction | 1 | 2 | 3 | 4 | 5 | |
| F5 | Overall opportunity for raising questions by participants | 1 | 2 | 3 | 4 | 5 | |
| F6 | Overall satisfaction with facilitator's clarifications on asked questions | 1 | 2 | 3 | 4 | 5 | |
| O | Other questions | Low | | | | | High |
| O1 | Overall rating of the training | 1 | 2 | 3 | 4 | 5 | |
| O2 | This training is worthwhile and should be conducted on a regular basis | 1 | 2 | 3 | 4 | 5 | |

| | | | | | | |
|-----------|--|---|---|---|---|---|
| Q3 | Appropriateness of training venue and physical setting | 1 | 2 | 3 | 4 | 5 |
| Q4 | Overall rating of lunch and tea/snacks arrangement | 1 | 2 | 3 | 4 | 5 |
| Q5 | Appropriateness of accommodation setting (if applicable) | 1 | 2 | 3 | 4 | 5 |

1. How did you get the information about this training?

2. Which of the training modules were the most useful to you?

3. Which of the training presentations or topics did you find the least useful?

4. What presentations in the modules were you expecting to hear, but were not presented?

5. What topics of modules of this training would you like to learn in detail?

6. Other comments and suggestions (if any)



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