

# Data Collection and Quality Assurance

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Training Workshop on Research Management and Research Information at DMR

# What is data?

- ❑ Observation or measurement characteristic of a person, object or phenomenon (or)
- ❑ Raw materials for statistics



# Variable Vs. Data

Variable	Data
<ul style="list-style-type: none"><li>• Age (in completed years)</li></ul>	<ul style="list-style-type: none"><li>• 20 Yrs, 32 Yrs, etc</li></ul>
<ul style="list-style-type: none"><li>• Education level</li></ul>	<ul style="list-style-type: none"><li>• Primary, Middle, High, etc</li></ul>
<ul style="list-style-type: none"><li>• Sex</li></ul>	<ul style="list-style-type: none"><li>• Male, Female</li></ul>



# Sources of data

- ❑ Primary data
- ❑ Secondary data
- ❑ Tertiary data



# Primary data

- The *primary data* are those which are collected afresh and for the first time, and thus happen to be original in character
- Examples: Experiments, Survey



# Secondary data

- **An existing data** to investigate research questions other than those for which the data were originally gathered (routinely available information)
- Examples: Vital registration, Hospital statistics



Before using secondary data, must see that they possess following characteristics:

1. Reliability of data
2. Suitability of data
3. Adequacy of data



# Tertiary data

- **Combination and reanalysis** of previously reported data, all relating to the **same research question**, from **multiple sources**
- e.g- 9 Randomized Controlled Trials of diuretic treatment for pre-eclampsia





# What is data collection

- **Data collection** is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes.



# When do we begin ?

The task of data collection begins after

- a research problem has been defined
- research design/ plan chalked out



# Types of data collection methods

- ❑ Quantitative data collection methods  
(in numbers) ကိန်းဂဏန်းများဖြင့် အချက်အလက်  
ကောက်ယူခြင်း
- ❑ Qualitative data collection methods  
(in words) စကားစုများဖြင့် အချက်အလက် ကောက်ယူခြင်း



# Quantitative Data Collection



# Quantitative Data Collection Methods

- ❑ Using available information (secondary data)
- ❑ Interviewing
- ❑ Administering questionnaire
- ❑ Clinical measurements: BP, Wt, Ht
- ❑ Investigations: ECG, USG, X'Ray, Blood CP, etc



# Using available information

- ❑ Census data
- ❑ Unpublished reports
- ❑ Hospital records
- ❑ Information routinely collected by others



# Interviewing (တွေ့ဆုံမေးမြန်းခြင်း)

A technique that involves oral questioning of respondents (questionnaire)

မေးခွန်းလွှာကို အသုံးပြု၍ နှုတ်ဖြင့်မေးမြန်းသော နည်းလမ်း

- ❑ Face to face interview
- ❑ Telephone interview



# Administering written questionnaire

- Also called self-administered questionnaire
- Questions are presented that are to be answered by the respondents in written form
- Not suitable for respondents with low education level and children



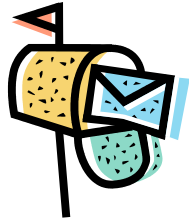


# Administering written questionnaire



- ❑ Gather the respondents & give instruction

- ❑ Mailing



- ❑ Online



# Types of questions

## *Based on question*

- Closed questions
- Open-ended questions
- Semi-opened questions

## *Based on response*

- Single response
- Multiple response



# Closed questions

- A list of possible answers/options (pre-coded)
- Commonly used for background variables
- Should be exhaustive & mutually exclusive



# Example of closed questions

What is your marital status?

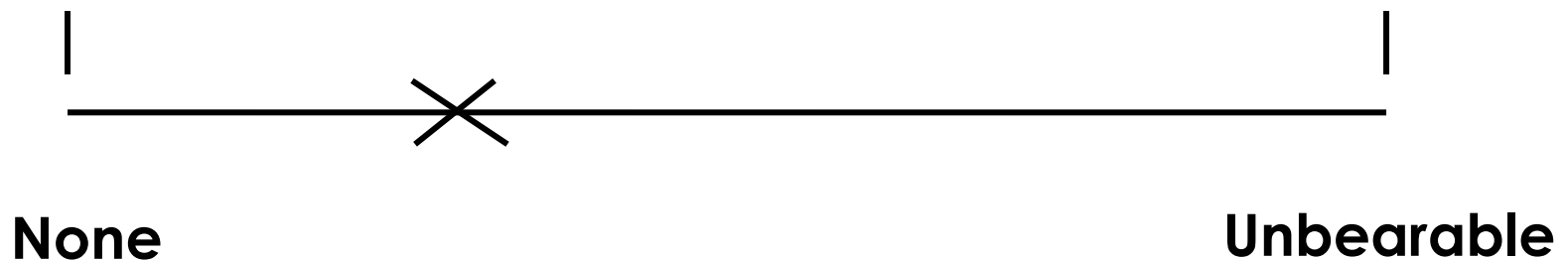
1. Single
2. Living together
3. Married
4. Separated
5. Divorced
6. Widowed



# Visual Analog Scale (VAS)

- Closed-ended questions using lines or other drawings
- Rate characteristics on a continuous scale

e.g- VAS for rating the severity of pain



How do you think about your health  
general for today?

ယနေ့ သင့် ကျန်းမာရေး အခြေအနေကိုဘယ်လိုထင်ပါသလဲ။

Your own  
health state  
today

best imaginable  
health state

100  
90  
80  
70  
60  
50  
40  
30  
20  
10  
0

worst imaginable  
health state



# Example of Likert-scale questions

Use in attitude questions for a particular issue

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
Contraceptive use can improve the mother's health.					
Contraceptive use is against the human nature.					



# Open-ended questions

- Free to answer with fewer limits imposed by the researcher
- Useful for exploring new areas

What are possible effects of climate change on the health of human being?

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# Semi-opened questions

What is your occupation?

- (1) Dependent
- (2) Manual labourer
- (3) Government employee
- (4) Private employee
- (5) Owned business
- (6) Others (please specify) \_\_\_\_\_



# Steps in designing a questionnaire

*Step 1:* Think for the **objectives and variables**

*Step 2:* Decide on the **main sections**

*Step 3:* **Write out** the questions

*Step 4:* **Sequencing** the questions

*Step 5:* Compose **a draft**

*Step 6:* Take out any questions that are not essential

*Step 7:* Check the **skip patterns**

*Step 8:* **Validation; Pretesting**



# Points to consider

- Use simple language
- Avoid conjunctive items
- Avoid questions that have ambiguous words or phrases
- Avoid leading questions
- Start with the easy questions
- Ask all respondents each question in exactly the same way



- Do not overload your interview schedule
- straight forward directions for the respondents so that they may not feel any difficulty in answering the questions.



# Example of KAP questionnaire

- Informed consent
- Section 1: Background characteristics
- Section 2: Knowledge questions
- Section 3: Attitude questions
- Section 4: Practice questions



# Points to consider in developing KAP questionnaire

- Knowledge questions
  - Record both prompted & unprompted responses
  - Arrange for skip patterns
- Attitude questions
  - Construct as the statements
- Practice questions
  - Check to include time in asking behavior
  - Arrange skip patterns



# Qualitative Data Collection



# Qualitative Data Collection

- Identification and exploration of **INSIGHT** in human behavior in the nature (**motivations, opinions, attitudes**) → **express in words**
- **‘Why’, ‘What’ & ‘How’** are important questions





# Qualitative Data Collection Techniques

- ❑ Focus group discussion (FGD)
- ❑ In-depth interview (IDI)
- ❑ Key informant interview (KII)
- ❑ Observation



# Focus group discussion (FGD)

ဝိုင်းဖွဲ့ဆွေးနွေးခြင်း

- A group discussion of 6-12 persons
- Gathers people from similar background
- Discussion guided by a facilitator
- Group members discuss freely & spontaneously on a certain topic



Person



Sitting  
Plan

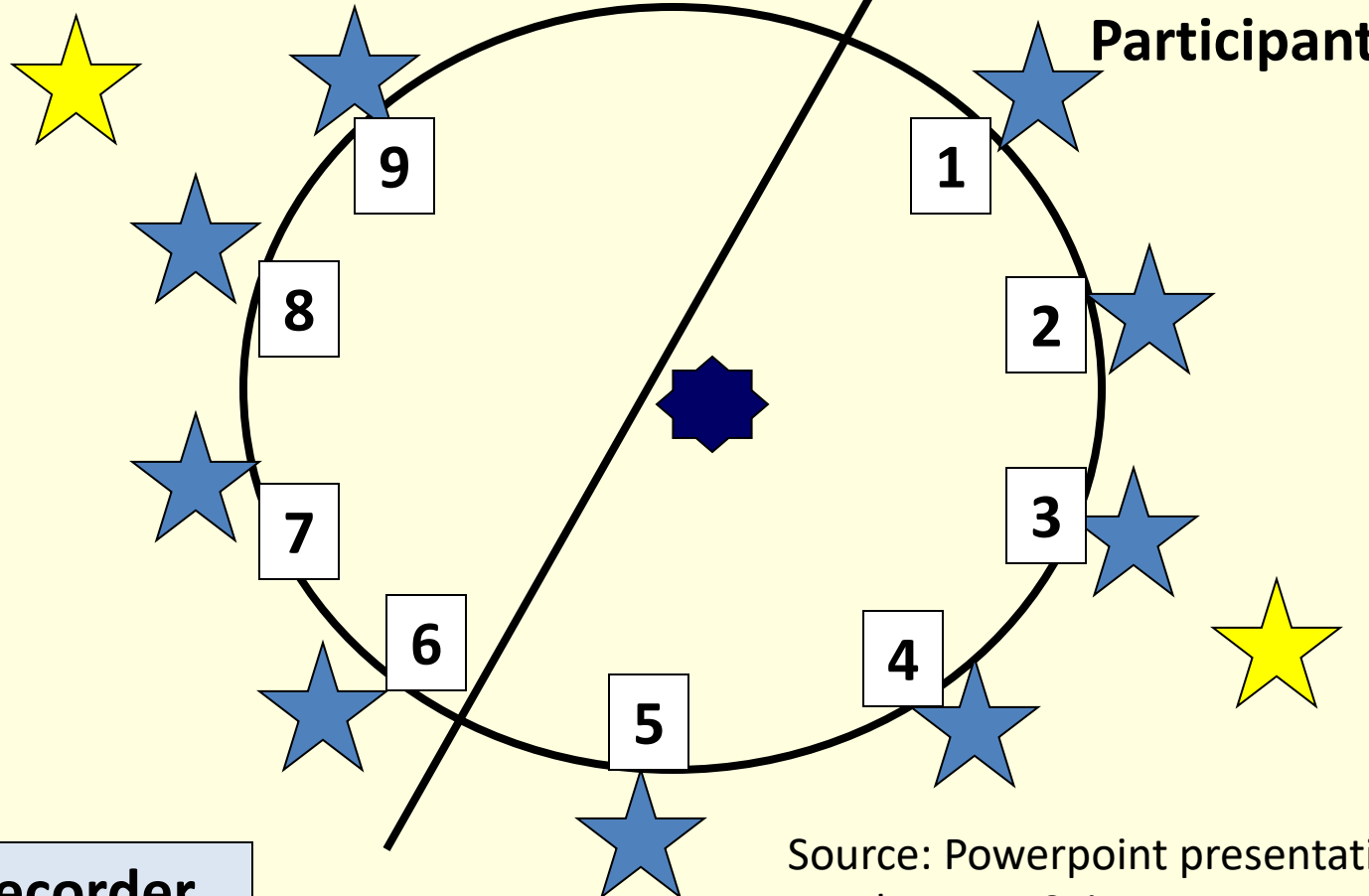
FGD  
Guide

Cassette Recorder

Facilitator



Participant



Source: Powerpoint presentation of  
Dr. Than Tun Sein



# In-depth Interview (IDI)

တဦးချင်း အသေးစိတ် မေးမြန်းခြင်း

- FGDs are not appropriate for asking sensitive issues
- An interview is made about the issues relating to the interviewee by using IDI guide
- Explore a person's perspectives, ideas, opinions, experiences, etc
- Sensitive issues may be included



# Key Informant Interview (KII)

နံနံစပ်စပ်သိရှိသူများအား မေးမြန်းခြင်း

- Getting information from the key informants, use KII guide
- Key informant → a person who can provide detailed information about a process/situation based on special expertise or knowledge
- An interview is made **not** about the informant, but about the process or a situation



# Developing FGD, IDI & KII Guides

- Introduction → introduce yourself & explain objectives of the study
- Ask some background characteristics
- Decide **major themes** based on the study objectives
- Develop open-ended questions under each theme
- “What”, “How”, “Why” are important questions to follow depending on the response



# Observation



A technique which involves systematically selecting, watching and recording behavior and characteristics of living beings, objects or phenomena

- ❑ **Participant observation**

The observer **takes part** in the situation he or she observes

- ❑ **Non-participant observation**

The observer watches the situation, openly or concealed, but **does not participate**

# Factors to be considered in choice of method

- Review your study objective
- What type of information do you require
- Independent and dependent variables
- Characteristics of the study population  
(age, literacy)
- Accessibility to sample (time, infrastructure)
- Which type of data collection technique will be used to gather the information you need





# Quality assurance in data collection



**Bias:** A **distortion** in the collected data so that it **does not represent reality**



# Possible sources of Bias

- Defective instruments (သုံးစွဲသည့် ကိရိယာချွတ်ယွင်းမှု)
  - Questionnaires (မေးခွန်းလွှာချွတ်ယွင်းခြင်း)  
e.g- Vaguely phrased questions
  - Measurements (တိုင်းတာမှုချွတ်ယွင်းခြင်း)
    - Un-standardized equipments (စံနှုန်းမညီထားခြင်း)  
e.g- weighing scale, BP cuff
    - Laboratory mishaps (ဓါတ်ခွဲခန်းမှ မှားယွင်းခြင်း)  
e.g- mislabeled specimens



# Possible sources of bias (cont.)

- Observer bias (လေ့လာသူ၏ချွတ်ယွင်းမှု)
  - Unclear guideline for conducting interview
  - Unclear instruction on how to measure
- Effect of interview
- Information bias (သတင်းမှားယွင်းခြင်း)
  - Memory/ recall bias
    - e.g- Has your child had diarrhea over the past 12 months?



# Control of Bias

- Standardization of all instruments
- Training of all interviewers
- Pre-testing questionnaire



# View different methods of data collection

Prevalence of hypertension may be obtained by

- Measuring blood pressure  
**(clinical measurement)**
- Asking a person if he/she has hypertension  
**(interview)**
- Record study  
**(document review)**



# Triangulation

- Combine number of methods (qualitative & quantitative)
- Collect data from different study population (e.g. patients, community member, health staff and health manager)

➡ **Give more comprehensive understanding**



# How to write in your proposal?

Data collection (Materials and methods)

➤ Preparatory phase

- Development of data collection tools (questionnaire/proforma/ guideline (or) preparation of necessary materials)
- Training of interviewers or data collectors
- Pre-testing or standardization of data collection tools



# How to write in your proposal? (cont.)

## Data collection (Materials and methods)

- Data collection phase
  - Mention data collection technique (interview, observation, investigation)
  - Describe the details of data collection procedures step by step
    - Who will perform what procedure?
    - Where will you do that procedure?





# References

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- Power point presentation of Dr Le Le Win, Lecture Notes, First training workshop on research capacity strengthening for basic health professionals, 2020, DMR
- Power point presentation of Dr Myo Myo Mon, Lecture Notes, Research methodology workshop, 2013, DMR



Questions, comments and suggestions  
would be greatly appreciated!

