Abstract
Although quantitative designs are commonly used in clinical research, some studies require qualitative methods. These designs are different from quantitative methods; thus, researchers should be aware of data collection methods and analyses for qualitative research. Qualitative methods are particularly useful to understand patient experiences with the treatment or new methods of management or to explore issues in detail. These methods are useful in social and behavioral research. In qualitative research, often, the main focus is to understand the issue in detail rather than generalizability; thus, the sampling methods commonly used are purposive sampling; quota sampling; and snowball sampling (for hard to reach groups). Data can be collected using in-depth interviews (IDIs) or focus group discussions (FGDs). IDI is a one-to-one interview with the participant. FGD is a method of group interview or discussion, in which more than one participant is interviewed at the same time and is usually led by a facilitator. The commonly used methods for data analysis are: thematic analysis; grounded theory analysis; and framework analysis. Qualitative data collection and analysis require special expertise. Hence, if the reader plans to conduct qualitative research, they should team up with a qualitative researcher.

**Keywords:** Focus group discussions, framework analysis, qualitative research

Introduction
In the past manuscripts, we have discussed study designs that are used for quantitative studies. Although those designs are commonly used in clinical research, some studies require qualitative methods. These designs are different from quantitative methods; thus, researchers should be aware of data collection methods and analyses for qualitative research. These are particularly useful to understand patient experiences with the treatment or new methods of management. These can also be used to explore certain issues in detail – such as stigma experienced by the patients or their caregivers. These methods are useful in social and behavioral research. In this manuscript, we have provided a brief overview of these methods.

Examples
**Thorneloe et al. (2017)**
The authors conducted a qualitative study to assess individuals’ perception of psoriasis and its management (including adherence). They conducted in-depth interviews (IDIs) with 20 individuals with psoriasis. They analyzed these interviews using framework analysis. They found that medication was a source of distress in these patients; this also resulted in poor self-adherence. The lack of clinician's engagement with these individuals was also responsible for distress. Thus, they concluded that some episodes of nonadherence to psoriasis medications was to reduce distress in these individuals.

**Witzel et al. (2017)**
The authors conducted focus group discussions (FGDs) to understand perceptions of HIV self-testing in men who have sex with men (MSM) in the United Kingdom. They conducted six FGDs with 47 MSM. One FGD included MSM who had never tested for HIV. They analyzed these data with a thematic framework analysis. They found that HIV self-testing after risky events will be useful only in those in whom the existing services are inadequate due to personal or structural barriers to HIV testing.

We strongly urge the readers to read these manuscripts. They provide useful practical information on the study design and analysis for qualitative research.

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Data Collection in Qualitative Health Research

When should one choose qualitative methods?

These methods are useful when the researcher wants to explore an issue in detail. For example, if the department has set up a new program to encourage HIV testing in high-risk population such as MSM, female sex workers, and people who inject drugs. However, the facilities are not being accessed as expected. Thus, the department can use qualitative methods to understand the reason for not accessing the testing services.

These methods are useful to understand the issues from the patient’s perspective or their care giver’s perspective. For example, why do not patients adhere to the treatment regime? Why cannot the caregivers accompany the patients for all the follow-ups? Which services will make the hospital visits useful for caregivers?

What are the sampling methods for qualitative research methods?

Although we have discussed various sampling methods in an earlier part of the module; we will focus on the methods commonly used in qualitative research.

The most common concern in quantitative research is: Are my results generalizable? The researcher should remember that in qualitative research, often, the main focus is to understand the issue in detail rather than generalizability. Various sampling strategies based on the earlier module on sampling strategies.

How does one collect data?

The researcher can use IDIs or FGDs for qualitative research in health-care settings.

In-depth interviews

It is a one-to-one interview with the participant. Usually, the researcher or the project manager conducts these interviews. The researcher has to prepare a topic guide; this guide usually has open-ended questions.

For example: Research question - To understand why individuals do not access HIV testing services

Sample questions

- Have you ever tested for HIV? When and how many times in the past?
- If never tested, why did not you test?
- Why do not you access the services at this center?

The researcher should remember that this is just a guide and not structured fixed questionnaire. Thus, probing questions can be added based on the response from the interviewee.

This method is useful to get the personal opinion that individuals may not be comfortable sharing in the presence of others. If the IDI is with a key informant (such a leader of a community, head medical officer) it may be referred to as key informant interviews.

Focus group discussions

It is a method of group interview or discussion, in which more than one participant is interviewed at the same time and is usually led by a facilitator. The FGD usually has four to ten participants.

These FGDs are useful to understand the issues of communities or group dynamics within a community. Since it is a group, the researcher can get different or contrasting views on the same topic at the same time.

However, there may be some issues while conducting these FGDs. For example, sometimes there may be heated arguments during the FGD. Some members of the group may always contradict others, while others may be quiet throughout the FGD. Whenever such a situation arises, the facilitator should step in, be polite yet firm while dealing with trouble makers, and come back to the main topic.

Purposive sampling

The researcher selects the researcher subjects purposively to answer the specific research questions. For instance, in the above-mentioned example of new testing facilities, the researcher will purposively select MSM who report high-risk behaviors.

In the study by Witzel et al., the authors purposively selected MSM who had never tested for HIV.

Quota sampling

In this method, the researcher selects the number of participants based on a quota. For example, in the study on HIV testing, the researchers can fix the number of individuals who will be included in the study. They will include two MSM, two female sex workers, and two people who inject drugs.

Snow-ball sampling

This may be particularly useful while recruiting hard to reach populations. In this method, the researcher identifies one individual from this group. This individual then identifies some more individuals with similar characteristics and refers them to the researcher.

For example, The researcher wants to study internalized stigma and risk behaviors in MSM who are not “out” in the community. The researcher wants to interview 10 individuals. Since this population will be difficult to access, it will be useful to identify one such individual (from the local group or organization). The first participant can suggest the next participant/s. Thus, the researcher will be able to access the required number of participants for the study.

MSM: Men who have sex with men
Besides these commonly used methods, other methods such as ethnography (observation of a group of people), conversation analysis (to understand communication with patients) are also used in qualitative research. We would encourage the readers to refer to the references provided in the bibliography to understand these methods in detail.

**Practical aspects of data collection**

1. Keep the translated topic guide ready (the translation should be in the language of the interview). Remember that this is just a guide. The facilitator/interviewer can add additional questions based on the responses during the interview. The questions in the guide are usually open-ended. The responses have to be descriptive and not just yes/no categories. Example: How would you describe our services? If there is a yes/no question, it should be followed by an open-ended question. Example - Do you like our services - Yes/No. If the response is yes, the follow-up question can be: What do you like about our services? If the response is no, the follow-up question can be: What do not you like about our services?

2. Record the interview (this should be included in the consent form). This can be audio-recorded using a recorder. The interviews have to be transferred to a computer from the recording device at the end of the day (or each session).

3. A person (other than the facilitator) should take notes during the FGDs. These notes could be: the dynamics of the group, information on individuals who were quiet most of the time, etc. These notes should be added to the data analysis report.

4. Transcription and translation of interviews: These recorded interviews should be transcribed (in the language of the interview) and translated (usually in English) for further analysis.

**Data Analysis**

The methods used for data analysis of qualitative data are different compared with those used for quantitative analysis. Some of the commonly used methods are: thematic analysis; grounded theory analysis, and framework analysis.

In the thematic analysis, the data are divided into multiple themes. These themes could be based on literature or emerging themes from the data. The researcher not only describes the themes but also explores the relationship between them. These are then described in detail in the report.

For example, an important theme in the HIV services could be “distance” from the service center. However, this may be common in individuals who belong to the lower socioeconomic group compared with the upper socioeconomic group.

The grounded theory analysis is iterative in nature. For example, after identifying some themes in the initial interviews, the researcher comes across a construct that was not originally thought about. Hence, questions about these constructs may be included in future interviews. The process continues till no further constructs are obtained – theoretical saturation. The process can be described as: sample; interview; analyze; identify new constructs; sample based on these new constructs; interview; analyze……. no new themes/constructs.

Framework analysis is commonly used in health-care research. This method of analysis uses a deductive approach in contrast to the grounded theory, which uses an inductive approach. The analyses start deductively according to the aims and objectives of the study and proceed systematically to identify the themes and subthemes in the data collected. The researchers read the transcript thoroughly and familiarize themselves with the contents of the transcribed text and identifying the thematic framework. Some of these themes are identified *a priori*, which can be examined in detail in the data. Some additional themes may also be identified according to the issues discussed by the participants. At the end of this process, the researchers will have identified concepts in the major themes, and subthemes.

For example, in the HIV services, we have identified certain themes – distance from home, cost of services. However, an additional theme that we have not identified “*a priori*” may emerge from the interviews – gender of the care providers.

Qualitative data usually generate a huge amount of transcribed/translated material. For organizing, coding, visualization, and analyses of these data the researcher can use computer programs. Some of these programs are “nVivo” (QSR International Pty Ltd (QSR) ABN 47 006 357 213), Atlas.ti (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany), and HyperResearch (©1997-2016 ResearchWare, Inc. Randolph, MA 02368-1258).

**Summary**

In this manuscript, we have just introduced the reader to some of the terms and methods used in qualitative health research. As may be seen in the above sections, qualitative data collection and analysis requires special expertise. Hence, if the reader plans to conduct qualitative research, they should team up with a qualitative researcher.

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**Conflicts of interest**

There are no conflicts of interest.
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