

Chapter 5. Interviews, Focus Groups, and Surveys

Section 5.1. Setting the stage

Data collection through observation yields rich information about *how* people do things, but this insight only provides part of the story. It is also important to understand *why* a system has been set up, or things are being done, in a particular way. Understanding why from the subject's perspective helps to prevent you, the observer, from introducing bias by assigning your own assumptions to something you have observed. It is also important to help you learn about people's mental models, preferences, and knowledge, in the context of technology use. Sometimes observations do result in an understanding of *why* the system functions as it does; namely, if you have the time and freedom to talk with, and ask questions of the people you are shadowing. However, in reality this is usually difficult because those being observed are busy, with little time to answer questions at length. This is why it is a good idea to plan to collect data in a number of ways, from multiple subjects, including using methods like interviews, focus groups, and surveys.

Interviews, focus groups, and surveys are all qualitative data collection methods used to gather information from subjects by asking them questions. They are useful for gathering data about participant perceptions, user preferences, or knowledge about a process, task or organizational issue, and are often applied in conjunction with observations ([Chapter 4](#)). However, they do not always correlate with optimized user performance and improved patient safety. This dissonance is an established human factors phenomenon called the performance versus preference paradox, [28] which states that users do not always perform better with items they prefer. As a result, make sure to interpret user preference data with caution, and in conjunction with supporting user performance data. For more information about generating user performance data, see [Chapter 8, Usability Testing](#).

Interviews, focus groups, and surveys may be used to collect data that range from being exploratory to structured in nature, and can be carried out in person, by phone, or electronically. Data collection tools for these methods vary depending on the type of data being collected, and could range from a blank notebook and pen to a formal series of electronic survey questions with predefined responses.

While planning for data collection through interviews, focus groups, or surveys, the project objectives, target subject group, and available resources should be considered to ensure relevant data are collected. Identifying interested participants can be a challenge, and before conducting interviews and focus groups, especially, it is important to first contact the managers of the departments you would like to include as part of your data collection. Introducing yourself during a staff meeting can be an excellent way to inform

staff of upcoming interview or focus group opportunities to boost interest and participation. For surveys, consider working with a manager, contact person, or organization familiar to your target participants to enhance your credibility, help you reach as many interested parties as possible, and improve the chances of people completing your survey.

Section 5.2. Interviews

Interviews are meetings, usually conducted either in person or by phone, where a data collector obtains information from one or more participants. Interviews can range from being exploratory, or semi-structured, to structured in nature, with questions prepared in advance by the interviewer being either more specific or open-ended. Depending on the nature and purpose of the interview, the same participant may be interviewed once or multiple times, and the interview length could last from just a few minutes to several hours.

Section 5.2.1. Why use them?

Interviews are an excellent way to understand a person's perceptions, preferences, and knowledge, as related to their roles and responsibilities. In addition to getting information about why systems function in a particular way, interviews can also provide insight to challenges, opportunities, and solutions from the perspective of an individual participant. Interviews allow some flexibility to the data collector, as topics of interest can be further probed and explored in real-time based on the responses of the interviewee.

Conducting interviews with staff prior to observing in the field can help acclimatize you to what you are about to see in advance, which can streamline your observation sessions. Interviews are also a great way to build rapport with a staff member who you will be observing later. In contrast, conducting interviews with staff after observing in the field can support the development of interview questions and provides an opportunity to get clarification of items not fully understood during the observation sessions.

From the biomedical technology professionals' perspective, conducting interviews can be helpful for getting:

- An overview of how a clinical area operates (e.g., funding, staffing, layout, patient flow)
- Information about policies and prescribed work practices (i.e., how people are instructed to carry out their work)
- Information about a subject's perspective, preferences, and experiences
- Historical information about a particular technology, issue, or incident
- Confirmation and clarification about observational data that have been collected

Section 5.2.2. When should they be used?

Interviews should be conducted before observing in the field if an understanding of the environment is required, or if the biomedical technology professional wants to build rapport with a participant before observing them. Additionally, if any confirmation or clarification is required based on what was observed in the field, conducting an interview is highly recommended.

Section 5.2.3. Preparing for Interview Data Collection

Regardless of whether interviews are open-ended, semi-structured, or structured in nature, a preliminary list of questions should be developed to serve as an interview guide, to ensure all required information is obtained from a participant at a minimum. This is especially important if the participant only has a limited amount of time available for the interview. No matter whether interviews are meant to be open-ended, semi-structured or structured, individual questions should be open-ended to avoid biasing or leading the participant and to solicit as much information and context from them as possible. Try to familiarize yourself with the set of questions, and to organize them in the interview guide so you can easily jump around from one to another as the conversation evolves. Keep track of any questions that have already been answered, as well as any outstanding questions, so you can optimize your time during the interview.

Think also about your strategy for recording information during the interview. If possible, arrange to have a second person attend the interview so one person can facilitate the session while the other records detailed notes. If it is not possible to have two people present, consider other strategies to capture data, like taking short-form notes, or using an audio recorder to tape the session. If an audio recorder is preferred, ensure you have proper permission (e.g., see discussion of consent and research ethics approval in [Appendix A: Confidentiality and Anonymity](#)), and that the participant is aware of the recorder, and gives their permission, before recording any part of the session.

Arrange to conduct the interview at a time and location convenient for the participant. Provide the participant with any background information such as the purpose of the interview or objectives of the project, and answer any questions they may have about the interview process. If the participant asks for a list of questions in advance, try to give them a general sense of what you will ask, but it is usually not necessary to share the exact questions with the participant in advance.

Section 5.2.4. Conducting Interview Data Collection

Introduce yourself and the project to the participant if they are not already familiar with the purpose and goals of data collection. Ensure they are still willing to participate, and if required, have them sign a consent form ([Appendix A: Confidentiality and Anonymity](#)). Using the interview guide, ask the participant the questions you prepared in advance. Keep track of the questions that have been asked, as well as the participant's

responses, so that if the participant volunteers an answer to a question that has not yet been asked, you do not ask the participant to answer the same question again.

Record the responses of the participant in real-time, and in as much detail as possible. If detailed notes cannot be taken during the interview, immediately following the interview, write down the participants' responses, and any thoughts or impressions you remember.

After the interview, send a thank you note to the participant to let them know you appreciate and value their contribution to the project. If they are interested in learning how their input impacted the project, commit to sharing any outcomes with them.

Section 5.2.5. Limitations of Interviews

While interviews are useful for learning about staff perspectives, experiences, and preferences, they should not be considered reliable for learning about how staff complete their work in reality. Many factors affect human behaviour and perceptions, and so when subjects are interviewed about how, or how often, they do a task or interact with a device, although they may be recounting things to the best of their ability, there will sometimes be a mismatch between what is shared during an interview and what is observed in reality.

Another limitation of interviews is that the interviewer can unintentionally introduce bias depending on how questions are posed to the subject. When questions are leading (e.g. 'don't you think that x is better than y?') or prompt subjects to provide only "yes" or "no" answers (e.g., 'is x time consuming for you?'), the data yielded from interviews will not be very useful at all. To avoid introducing bias based on the wording of the interview questions, as the interviewer, try to keep questions open-ended (e.g. ask 'what happened?' rather than 'did x happen?'), and avoid bringing assumptions into your interpretations. To ensure you fully understood what the subject said, verbally summarize what you think they said and ask them if you have interpreted correctly.

Bias can also be introduced by the order in which questions are asked. Where possible, balance topics in the interview to minimize this effect.

Section 5.3. Focus Groups

A focus group is essentially a group interview, typically done in person, where a data collector obtains information from multiple subjects at once. A facilitator or moderator (who may also be the data collector) leads a focus group, and although the size of a focus group can vary from just a few participants to many, a group size of about six to eight is ideal [29]. A general set of questions to promote discussion among focus group participants is prepared in advance, but questions can also be added or modified in real time as required. A focus group is different from an interview not only in terms of the number of people participating, but also because the data generated during the session is synergistic:

participants share their own perspectives and preferences and listen to others' viewpoints, which may ultimately change their own.

Section 5.3.1. Why use them?

Focus groups provide an opportunity for the human factors practitioner to become exposed to multiple participant perspectives in a relatively short amount of time. Perspectives, preferences, challenges, and opportunities can be explored based on the experiences of the participants. When presented with an issue or solution, focus group participants are likely to share multiple perspectives, and if the session is well facilitated, to talk through those perspectives as a group. As participants agree or disagree on topics, a clearer understanding of the differences within and between user groups, and the variations in practices, preferences, and knowledge within and between the groups can be achieved.

Focus groups are a great way to involve staff from across the organization in a project, and to share information across units, specialties, or departments, that would not typically work together. Participation in a focus group tends to improve staff interest and motivation in supporting subsequent steps of a project, especially if a focus group has been done early in the project. The opportunity to have staff build off one another's ideas in a collaborative manner can be a very positive experience for everyone involved.

From the biomedical technology professionals' perspective, conducting a focus group will be helpful for getting:

- Exposure to multiple participant perspectives and experiences in a short amount of time
- A multidisciplinary team to think about, and collaborate on, a common issue or solution
- Consensus from a group of stakeholders about a particular issue or solution
- Buy-in for a strategy or solution, especially if focus group participants helped to shape it

Section 5.3.2. When should they be used?

A focus group should be conducted when a range of perspectives or experiences is desired, when a range of candidate solution are sought after, or when consensus or group buy-in are required.

Section 5.3.3. Preparing for Focus Group Data Collection

For a focus group to be fruitful, similar to preparing for an interview, a preliminary list of questions should be developed in advance to ensure the required information is obtained from the group. Questions should be open-ended to encourage discussion among group members.

If possible, arrange to have a second person attend the focus group so one person can facilitate the discussion while the other records detailed notes. Facilitating a focus group requires quite a bit of skill to ensure each participant has a chance to share their opinion if they wish, and to help keep the discussion on track to get the required information. If it is not possible to have two people present, as for an interview, consider other strategies to capture data like taking short form notes or using an audio recorder to tape the session if it is allowed and if all the focus group members consent.

Arrange to hold the focus group at a time and location convenient for the participants to attend. Consider bringing coffee, juice, and snacks for participants, especially if the session is scheduled to last for more than about an hour. Be prepared to have participants join and leave the focus group throughout the session, especially if it has been scheduled during working hours.

Section 5.3.4. Conducting Focus Group Data Collection

At the start of a focus group, introduce yourself and the objectives of the session. Roundtable introductions, or an icebreaker activity can be helpful in making participants feel more comfortable, especially if they do not all know each other. Using the questions you developed in advance, ask the group a question and listen to the discussion that follows. Record the discussion in real-time and in as much detail as possible.

Facilitating a focus group requires specific communication skills to ensure each participant's ideas and opinions are respectfully heard. It is important to show participants you are actively listening and interested in what they have to say. If there is a designated note taker, it can be helpful to project typed notes, or to write participant's perspectives on a chalkboard or chart paper so everyone can see what has been discussed and the group can ensure each participant's thoughts have been captured accurately. Using probing questions and clarifying what participants have shared can be helpful in encouraging further discussion among focus group members.

Depending on the dynamics of the group, you may have to solicit responses, especially at the beginning of the session, by asking individual people if they would like to share. Often as a focus group progresses, people become more and more comfortable in sharing their perspectives.

When one or two participants dominate a focus group, it is the role of the facilitator to ensure that all participants' ideas and opinions are respectfully heard, and that everyone has the opportunity to contribute if they wish. As a facilitator, try to solicit responses from all participants by asking specific people open-ended questions to give them an opportunity to share.

For additional information and guidance on conducting focus groups, see the *Toolkit for Conducting Focus Groups* resource included in [Section 5.6](#).

Section 5.3.5. Limitations of Focus Groups

When one or two individuals dominate a focus group, it will fail to provide the biomedical technology professional with a balanced, or consensus view of the group's experiences, perspectives, and preferences. To avoid this either involve, or take on the role of, an effective facilitator who encourages all group members to share their opinions. This can be challenging depending on the different personalities, reporting relationships and organizational culture of the group. Encourage having a single person speak at a time and ensure group members are respectful of one another. Try to avoid having a staff member and their manager in the same focus group because the staff member may feel uncomfortable speaking freely due to the presence of their boss.

Section 5.4. Surveys

Surveys are data collection tools, administered by a data collector, to obtain information from subjects. Surveys include a written set of questions, prepared in advance, to gather a range of pre-defined and open-ended responses from subjects. Surveys can vary in content, format, length, and delivery mechanism, depending on the purpose of data collection and the intended subjects.

Section 5.4.1. Why use them?

Surveys can be an efficient and cost effective means of collecting data about many participants' perspectives, preferences, and knowledge in a relatively short amount of time, without having to coordinate the schedules or locations of participants. Exploratory, or open-ended survey questions help the data collector to understand the range of experiences and preferences of participants, while more structured questions shed light on the perceptions and preferences of the majority of subjects. Depending on the survey design, standardized information across multiple survey respondents can be compared and quantified using statistical analysis.

Some staff members may prefer completing a survey to participating in other data collection methods like interviews or focus groups, because survey responses can remain anonymous and participants can take time to reflect before responding to a question.

From the biomedical technology professionals' perspective, conducting a survey will be helpful for getting:

- Demographic information about a group of participants
- Information about the level of experience of a group of participants
- An understanding of the range of perceptions, preferences, or knowledge of respondents

- An understanding of the perceptions, preferences, or knowledge of the majority of respondents
- Standardized datasets to conduct descriptive statistical analyses about participants' perspectives and preferences

Section 5.4.2. When should they be used?

Surveys should be administered when the perspectives, preferences, or knowledge of many people is desired, or when it is difficult to schedule participants for interviews because of their availability or geographical location. Exploratory questions should be used when a range of perspectives is desired, and structured questions should be used when a more standardized understanding of the average or majority of respondents is required.

Section 5.4.3. Preparing for Survey Data Collection

Survey questions should be prepared in advance regardless of whether the survey will be presented in paper or electronic format. Questions should be tailored based on the target participant group, and whether open-ended (exploratory) or closed-ended (structured) responses are desired. An example of an exploratory versus a structured approach to a survey question is included in [Figure 8](#).

Exploratory Question

Which smart pump feature(s) do you use the most frequently?

Structured Question

Of the smart pump features listed below, which do you use the most frequently? (Check all that apply)

- ☐ Drug library
- ☐ Rate calculator
- ☐ Body surface area calculator
- ☐ Bolus function

Figure 8. Comparison of an exploratory versus a structured survey question

As you can see, with the more structured question, participants are prompted to choose their answers from the supplied list, while the exploratory version leaves it up to the participant to think of the most correct answers from their perspective. The

exploratory question is likely to extract a wide range of possible answers from participants, while the structured question is likely to cause participants to home in on one or more of the options provided.

If a goal of your survey is to be able to analyze data using descriptive statistics, a more structured survey approach will be required. In this case, in addition to questions about the project objectives and content of interest, it is also recommended that structured questions about a person's gender, age range, experience level, and unit type or specialty be included to provide additional demographic context to survey responses.

When developing your survey, another important consideration will be how to keep track of respondents to ensure duplicate responses can be accounted for. This tends to be easier when participants' identities do not need to be kept confidential, as the respondent's name can be used as an identifier. However, when participant's identities must remain anonymous, other approaches to tracking respondents will have to be used. A possible approach is to link a confidential participant name to an anonymous participant identification number so a respondent's identity is not directly included on the survey. Another option would be to use an electronic survey tool, that limits the number of responses coming from a single computer to one, and includes features like customized survey links to help manage tracking multiple respondents. If you are concerned about receiving duplicate responses, an affidavit or declaration could be included at the beginning or end of your survey, stating that by checking the box, the participant confirms they have not completed your survey already. The rigour with which responses are tracked, and restrictions for including personal information or tracking numbers, will depend on your institution, your subjects, and the objectives of the project.

Before distributing your survey to participants, it is highly recommended you validate it through pilot testing with one or more representative end users to ensure it is clear and covers material that is relevant to your target participants. This is because when surveys are unclear, the data collected may not accurately reflect the opinions or experiences of participants. If you have a project contact person, reach out to them to see if they would be willing to review your survey or if they know of a colleague who might review your survey instead.

Section 5.4.4. Conducting Survey Data Collection

Once your survey form is complete and has been validated, participants can be invited to complete your survey either in person or electronically, depending on your target population and the number of people you hope will complete your survey. If you can arrange to invite participants to complete your survey through a familiar and trusted source, such as a clinical colleague, clinical manager, or recognized organization, it is often easier to get your target population to participate. Alternately, if you can inform

participants about your survey in person, such as during a staff meeting, you can answer any questions about the survey or the project, and potential participants will later know to expect your invitation to complete the survey.

Section 5.4.5. Limitations of Surveys

When surveys are used in isolation of other data collection methods like observations, or even interviews and focus groups, there is a risk that an incomplete picture of a subject's perspectives, perceptions, and knowledge will be collected. Unlike interviews and focus groups, where the data collector can rephrase questions or probe deeper on a subject in real-time, surveys are static data collection tools. If questions are confusing or easily misinterpreted, the data collected through a survey will not be useful to the biomedical technology professional, and may even be incomplete or incorrect. Testing the validity of a survey (i.e., how well the survey measures what has been set out to measure) is highly recommended to ensure you get the most out of your survey tool. Pilot testing your survey with a small number of representative users to get feedback about the survey design and to determine how respondents interpreted questions as they were posed is a good way to validate your survey.

Another limitation of surveys is that when used to collect information about past issues and incidents, it can be difficult to design them to capture the level of detail required to understand the real root causes and contributing factors of those issues and incidents. Consequently, the human factors practitioner should almost always interpret this type of survey data in conjunction with data collected from other sources.

Although subjects may be more comfortable answering survey questions than participating in an interview or focus group, it can still be difficult to get participants to complete a survey. Surveys are less likely to be completed by participants if they are:

- Too long
- Have little perceived value to the participant
- Distributed from an unfamiliar source (e.g., a person or organization that is unknown to the participant)
- Accompanied by too short or too long a timeframe to respond (2 weeks is usually appropriate as it allows time for people who are on vacation or not on shift for a few days).
- Saturated with too many surveys
- Not presented in a timely manner (e.g., surveys about particular equipment are best distributed immediately after their use)

Again, pilot testing your survey with a small number of representative end users in order to solicit feedback is a good way to gain insight about whether any of these rules of thumb have been violated.

Section 5.5. What to do with Interview, Focus Group, and Survey Data

The methods chosen to analyze interview, focus group, and survey data will partially depend on the type of data that was collected (e.g., structured versus semi-structured interviews), and the objectives of the project. Qualitative data analysis techniques, such as the constant comparative method [30] are commonly used to examine these data. However, as a health technology manager, interview, focus group and survey data will usually be linked with observational data, and used as an input to other human factors analysis techniques and methods like task analysis, usability testing, ^{HF}FMEA and ^{HF}RCA. The subsequent sections of Part II of this book will discuss these human factors methods in greater detail.

Section 5.6. Additional Interview and Focus Group Resources

Toolkit for Conducting Focus Groups:

<http://www.rowan.edu/colleges/chss/facultystaff/focusgrouptoolkit.pdf>