Overview of Qualitative Research Methods
Part I

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Hello, welcome to this 3-part introduction to qualitative research methods. My name is Julie Stoner. I am a Professor of Biostatistics in the College of Public Health at the University of Oklahoma Health Sciences Center.

This introductory series is based on a graduate course that I developed with Dr. Toby Hamilton from the OUHSC College of Allied Health. Much of the content was developed by Dr. Hamilton and is driven by her work as an occupational therapist and qualitative researcher.

In the first module, we will briefly review the main categories of quantitative research projects in clinical research and public health evaluation. In the second module, we will focus on differences between qualitative and quantitative research paradigms. In the final module, we will learn more about data collection strategies and methods to ensure rigor in qualitative research studies.

Learning Objectives

- Review types of quantitative research in population and clinical health
- Identify questions that are best addressed using qualitative research methods

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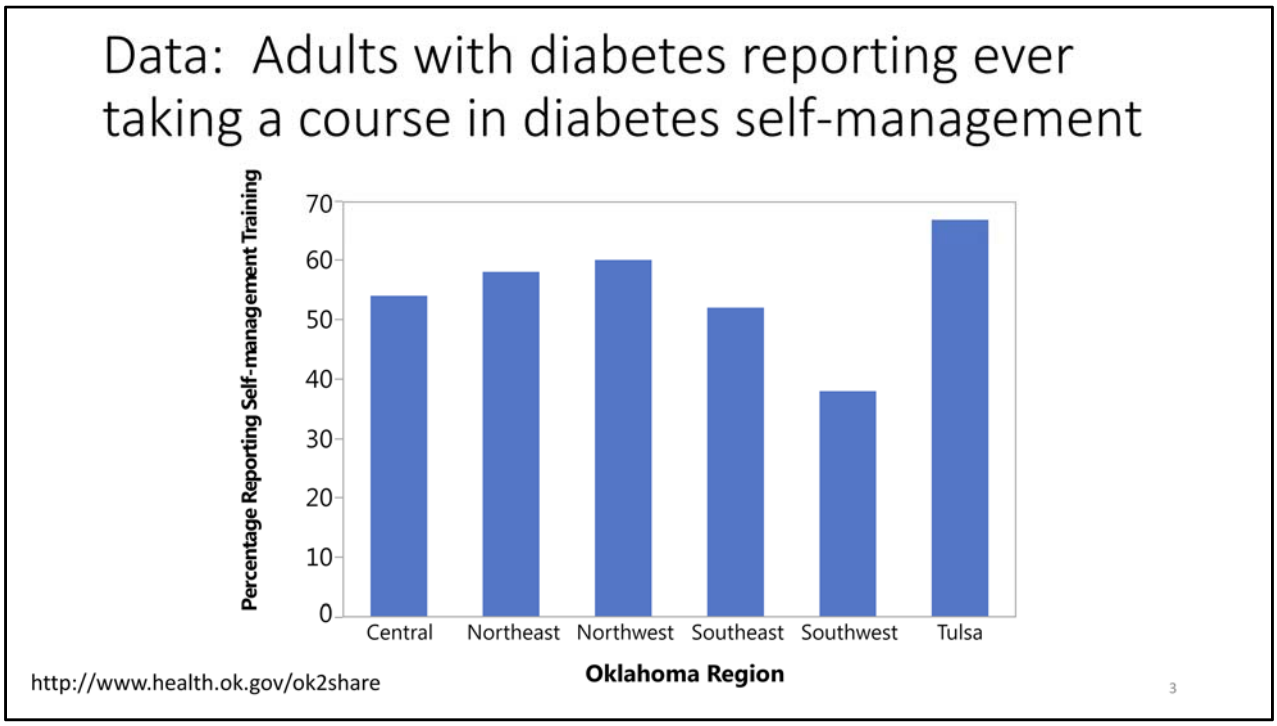
There are two primary learning objectives. First we will review the main types of quantitative research in public health and clinical health settings.

Then with this background in mind, we will identify research questions that cannot be fully addressed with quantitative research methods and instead are best addressed through qualitative research studies.



Let's begin by considering a data example. In this figure, we have summarized data from the 2015 Oklahoma Behavioral Risk Factor Surveillance Survey among adults aged 18 years and older. Participants who indicated that they have diabetes were asked whether they had ever taken a course in diabetes self-management. We can see that the percentage reporting training varies across the regions from 38% in the Southeast to 67% in the Tulsa region.

We recognize that all patients with diabetes should receive a course in diabetes self-management and based on these data are concerned about adults in all regions, but particularly those in the Southwest region.

Based on these data, what are some questions that come to mind?

- Why is the training percentage so low in some regions? Are the low rates due to a lack of courses and diabetes-related care or are there barriers to training at an individual participant level? For example, patients may not participate because they don't see value in the training.
- Are participants forgetting that they did in fact receive training or perhaps they did not understand the training or communication with their health care provider (a problem related to health literacy)?

- We may also want to know more about the experience of patients with diabetes in each region.
- We may also want to know more information about other barriers, such as cultural barriers to receiving diabetes-related training and care.
- On the other hand, there may be factors in some communities that facilitate training. We would like to identify these as well.

This quantitative summary of survey responses has raised a lot of questions that we would need to consider when addressing disparities across regions and overall in these training percentages.

Citation: Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Behavioral Risk Factor Surveillance System 2015, on Oklahoma Statistics on Health Available for Everyone (OK2SHARE). Accessed at http://www.health.ok.gov/ok2share on 20AUG2017:13:43:12.

Motivation

- Human health is complex
- Not all factors can be quantified
  - Experiences
  - Beliefs/perceptions
  - Family/social environment
  - Community and culture
- Relationships
  - Multiple perspectives

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As we think about our research or program planning and evaluation in clinical research settings or public health settings, we recognize that human health is complex. There are many determinants of health and everyone does not respond in the same way to particular exposures, treatments or behaviors.

In thinking about factors associated with disease, outcomes, and health status, we recognize that not all exposures, behaviors, or factors can be quantified. For example, in addressing outcome disparities among children with rare forms of cancer in Oklahoma, we may be interested in identifying factors that are associated with poorer health outcomes in terms of increased risk of death or tumor recurrence. We could begin by collecting and summarizing information about several factors including

- The stage or grade of the disease to determine if children in certain communities or regions of Oklahoma are diagnosed at later stages when the tumor is more difficult to treat?
- Are patients receiving standard-of-care treatments and does this differ across regions of the state based on distance to pediatric cancer treatment facilities?
- Are patients completing all cycles of recommended treatment and does this differ by distance to treatment facilities?
- Are patients following up with their care providers for continued screening and

monitoring for recurrence and treatment response?

When differences in outcomes and exposures like those that we just presented are found, we would then try to identify barriers to receipt of standard-of-care treatment and follow-up or facilitating factors for improved adherence. Some factors, like distance to a pediatric cancer specialty treatment center or type of insurance, could be measured or summarized quantitatively, while other factors are not yet known or cannot be easily measured. Also, some of these factors may be specific to different communities or regions of the state. As an example, to identify new factors associated with adherence to treatment guidelines, we may want to study the family's experience with cancer diagnosis and treatment to determine if there are particular time points or needs for better support or service navigation. These types of factors may not be known or established for specific communities of interest. Other subjective areas would relate to beliefs and perceptions regarding diagnosis and treatment, family and social settings or environments, and cultural beliefs or practices.

Another aspect to consider is that there are multiple perspectives that are relevant to a given health issue. In the pediatric cancer example, parents have a perspective, as do the children and the providers, both the cancer specialists and the pediatricians or primary care providers. If we were interested in studying barriers for good adherence, targets for improving access to care and adherence may differ for each of these groups.

In summary, we recognize that some factors are not known and may be more subjective in nature, requiring an approach other than quantitative research strategies.

Image: http://advancingyourhealth.org/highlights/2014/12/17/emory-johns-creek-community-health-classes/

Example: Patient Perceptions

JGIM

ORIGINAL RESEARCH

Challenges Faced by Patients with Low Socioeconomic Status During the Post-Hospital Transition

Shreya Kangovi, MD[1,2,3,4,7], Frances K. Barg, PhD[5], Tamala Carter[7,5], Kathryn Levy, MD[3], Jeffrey Sellman, BA[2], Judith A. Long, MD[1,3,4,6], and David Grande, MD, MPA[3,4]

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BACKGROUND: Patients with low socioeconomic status (low-SES) are at risk for poor outcomes during the post-hospital transition. Few prior studies explore perceived reasons for poor outcomes from the perspectives of these high-risk patients.

OBJECTIVE: We explored low-SES patients' perceptions of hospitalization, discharge and post-hospital transition in order to generate hypotheses and identify common experiences during this transition.

DESIGN: We conducted a qualitative study using in-depth semi-structured interviewing.

PARTICIPANTS: We interviewed 65 patients who were: 1) uninsured, insured by Medicaid or dually eligible for Medicaid and Medicare; 2) residents of five low-income

CONCLUSIONS: Low-SES patients describe discharge goals that are confusing, unrealistic in the face of significant socioeconomic constraints, and in conflict with their own immediate goals. We hypothesize that this goal misalignment leads to a cycle of low achievement and loss of self-efficacy that may underlie poor post-hospital outcomes among low-SES patients.

KEY WORDS: post-hospital transition; disparities; goal-setting.
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Let's consider a few examples of qualitative research projects.

In this study, investigators explored low socioeconomic status patients' perceptions of hospitalization, discharge and post-hospital transition with an overall objective of identifying experiences and possible targets for interventions or support that would address these targets and result in improved post-hospitalization health outcomes.

The investigators interviewed the patients to gain a better understanding of the experience of the patients during hospitalization, discharge and post-hospital transition. The investigators were not starting with hypotheses that they were testing using the study data but were instead collecting data using open-ended interviews, summarizing the data to identify common experiences among the low-SES patients and based on the themes identified, generate hypotheses that could then be tested.

Reference: Kangovi, S., Barg, F.K., Carter, T., Levy, K., Sellman, J., Long, J.A. and Grande, D., 2014. Challenges faced by patients with low socioeconomic status during the post-hospital transition. *Journal of general internal medicine*, *29*(2), pp.283-289.

Example: Life-Course Fruit & Veggie Consumption

RESEARCH ARTICLE

Life-Course Influences on Fruit and Vegetable Trajectories: Qualitative Analysis of Food Choices

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ABSTRACT Food consumption plays an important role in health, and understanding the process of food choice is central to health promotion. A person's life-course transitions and trajectories (persistent thoughts, feelings, strategies, and actions over the lifespan) are fundamental influences on the development of his or her personal system for making food choices. This analysis used a life-course perspective to examine influences on the fruit and vegetable choices of adults. A purposive, multiethnic sample of 86 adults in one U.S. city participated in semi-structured in-depth interviews about their life course, food choices, and influences on fruit and vegetable consumption. Qualitative analysis of interview transcripts, using a grounded theory approach based on the constant comparative method, revealed that past life-course events and experiences were strong influences on present systems for fruit and vegetable choices. Life-course transitions, especially role changes and health events, placed people on relatively stable dietary trajectories that shaped current food choices. Most people experienced a few major transitions that influenced their fruit and vegetable choices.

ment. Food choices have been examined from a variety of perspectives, considering physiologic, psychologic, social, cultural, economic, and other factors.[2,3] An integrated model of the food choice process[4,5] has identified the life course as an important input into food choices, involving both individual life stages as well as historical and cohort effects. To develop a deeper understanding of how someone's life course shapes his or her food choices, we examined the development of food choice trajectories for fruit and vegetable use.

Life-course perspective. We used a life-course approach to examine continuity and change across the lifespan, emphasizing life transitions, trajectories of actions, and the timing of life events in relationship to historical changes and present contexts.[6-8] Life-course patterns are seen as trajectories that represent dynamics beyond life stage or life cycle conceptualizations.

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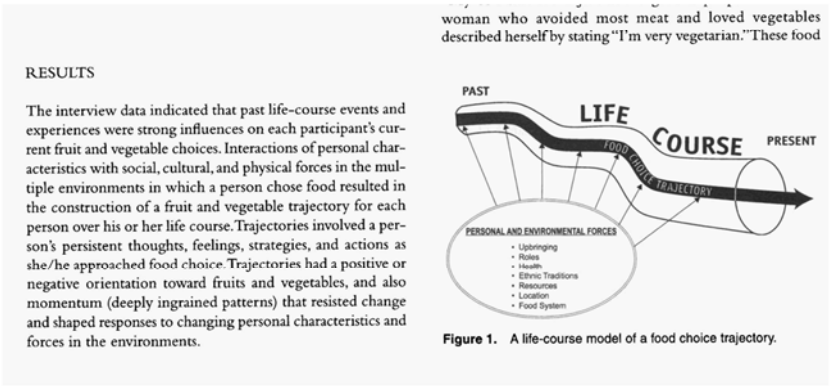
Here is another example of a qualitative research study.

In this study, investigators used a qualitative research study to understand the thoughts, feelings, strategies and actions of adults related to food choices over their lifetimes. The investigators used interviews to collect information related to adults' systems and approaches for making fruit and vegetable choices and to understand how these processes and approaches may have changed over their lifetimes. This study is going beyond an analysis of what foods are eaten, but instead aims to understand what factors motivate food choices and what processes individuals use to make food choices.

Reference: Devine, C.M., Connors, M., Bisogni, C.A. and Sobal, J., 1998. Life-course influences on fruit and vegetable trajectories: qualitative analysis of food choices. *Journal of Nutrition Education*, *30*(6), pp.361-370.

Life-Course Fruit & Veggie Consumption: Grounded Theory



RESULTS

The interview data indicated that past life-course events and experiences were strong influences on each participant's current fruit and vegetable choices. Interactions of personal characteristics with social, cultural, and physical forces in the multiple environments in which a person chose food resulted in the construction of a fruit and vegetable trajectory for each person over his or her life course. Trajectories involved a person's persistent thoughts, feelings, strategies, and actions as she/he approached food choice. Trajectories had a positive or negative orientation toward fruits and vegetables, and also momentum (deeply ingrained patterns) that resisted change and shaped responses to changing personal characteristics and forces in the environments.

woman who avoided most meat and loved vegetables described herself by stating "I'm very vegetarian." These food

Figure 1. A life-course model of a food choice trajectory.

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The investigators found that past life-course events and experiences influenced a participant's current fruit and vegetable choices.

They also found that interactions with social, cultural, and physical environmental factors were also influential. The investigators identified themes related to thoughts, feelings, strategies and actions of the participants that influenced fruit and vegetable choices. The investigators then developed a theoretical model of factors that influence food choices based on the rich data collected through the interviews. This breadth of data is representative of information that is collected in qualitative research studies, which typically involve a small number of participants but in-depth information is collected from each participant.

Life-Course Fruit & Veggie Consumption: Quotes

higher lifelong fruit and vegetable consumption.

Two of the most prominent of these positive experiences with fruits and vegetables were growing up on a farm or having a garden earlier in one's life:

> *When I was a smaller child, it was all raised by my grandfather. It was actually fresh vegetables that came out of the garden. So I think that stayed with me during my entire life and that's why I like to get fresh foods, fresh vegetables, etc.*

Foods disliked early in life or not part of childhood experiences were not incorporated into personal food systems and often remained unsought, unacceptable, or uneaten. Many people told us they had disliked vegetables since they were children. Some related stories of being forced to eat vegetables as a child, sitting at the table long after the food was hot and at its best:

> *I just remember sitting at the table with a dish of cold green pea soup . . . this cold food and [parents] saying 'You have to eat this. This is good for you.' Or eating this nasty cauliflower. . . All these things I remember. So I try to avoid them.*

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Another interesting feature of qualitative research is the approach for presenting results.

Because we are not quantifying responses or categorizing responses, and we want to retain the richness of the data, we see results that include direct quotes from participants that support the identified themes. This slide shows several quotes that support themes that were identified by the investigators.

Quantitative Research Methods - Questions

- Types of research questions
  - Etiologic
  - Prognostic
  - Intervention/program evaluation
  - Diagnostic

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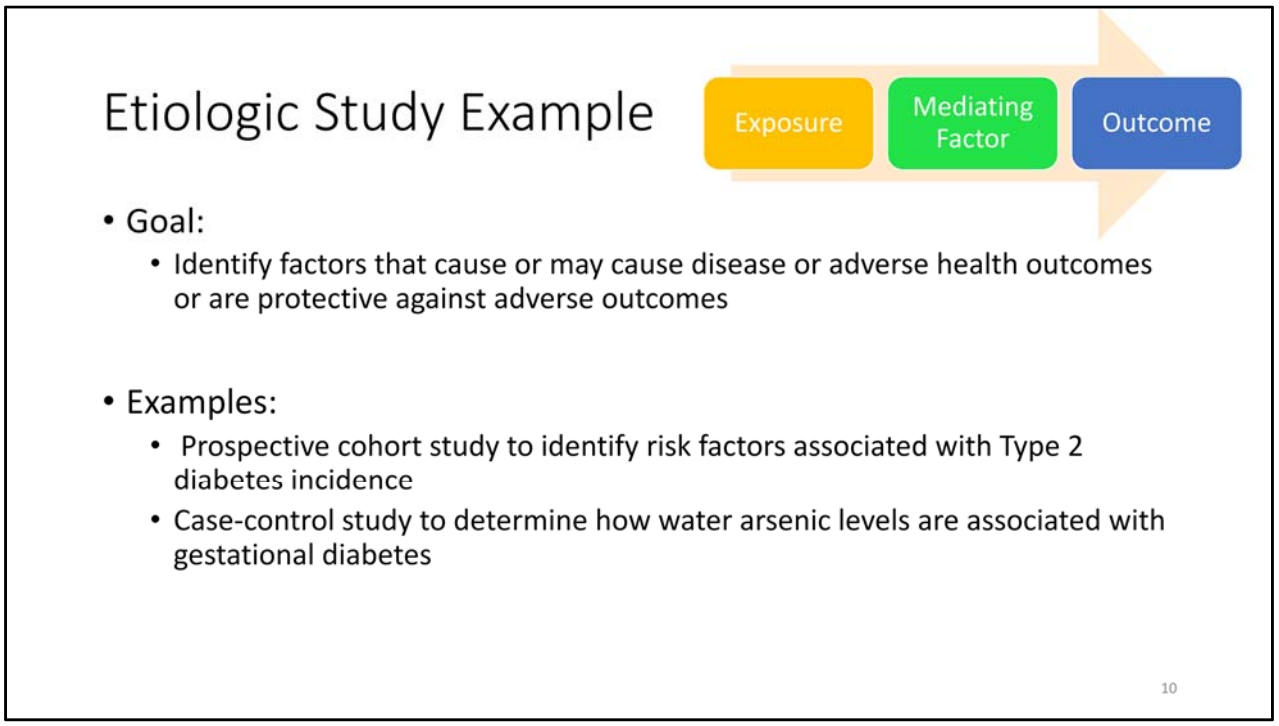
Before moving into details of qualitative research studies, let's briefly review types of research questions that can be addressed using quantitative research methods.

The main types of quantitative research questions that we will discuss are

Etiologic
Prognostic
Intervention/program evaluation
Diagnostic

You may be familiar with these types of studies in your area of research or public health program development and evaluation.

We will find that aspects of each of these areas can be addressed using qualitative research as well (meaning, a combination of quantitative and qualitative approaches, or a mixed-methods approach).



The first type of study that we will discuss is an etiologic study. The goal of an etiologic study is to identify factors that may cause disease or adverse health outcomes, or perhaps be protective or reduce risk of adverse outcomes.

As an example, we may conduct a prospective cohort study to identify risk factors associated with Type 2 diabetes. These might include genetic or family characteristics, health behaviors or other exposures.

Another example is a case-control study to determine how water arsenic levels are associated with gestational diabetes. Such a study would also want to investigate potential confounding factors related to environmental arsenic exposure and gestational diabetes such as access to fruits and vegetables.

Prognostic Study Example

- Goal
  - To develop models that can be used to predict outcomes such as the probability of an adverse health outcome like stroke or years of life expectancy
- Examples
  - Utilize behavioral and clinical factors to develop a model predictive of stroke among American Indians
  - Estimate life expectancy for patients using current behaviors and with the cessation of smoking or other behaviors

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The second type of study that we will discuss is a prognostic study.

The goal of a prognostic study is to develop models that can be used to predict outcomes such as the probability of an adverse health outcome like stroke or years of life expectancy.

As an example, we may use information collected in a prospective cohort study of cardiovascular disease among American Indians to develop a predictive model for stroke using behavioral and clinical factors.

As a second example, we may want to estimate the number of years gained if a given patient stops smoking. This estimate would be based on a predictive model using patient characteristics and behaviors, and may also use national-level lifetable information to estimate life expectancy.

Intervention/Program Evaluation Example

- Goal:
  - To estimate the efficacy and safety, and sometimes the cost-benefit ratio, associated with an intervention or public health program.
- Examples:
  - Determine the reduction in the incidence of Type 2 diabetes associated with a particular exercise program
  - Determine the change in primary care provider adherence to cholesterol screening guidelines with the addition of academic detailing and health information technology.

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In an intervention or program evaluation study, investigators are interested in estimating the efficacy and safety, and sometimes the cost-benefit ratio, associated with an intervention or public health program.

With evaluation studies, we typically use methods such as randomization and controls to estimate the impact of the treatment or intervention while minimizing the effect of confounding factors.

As an example, we may be interested in estimating the impact of a particular exercise program on reducing the incidence of Type 2 diabetes. Participants would be randomized to the program or to a standard counseling program and the incidence of diabetes would be compared between the groups after a period of several years.

As a second example, we may develop a quality improvement-based intervention with an aim to improve primary care provider adherence to evidence-based guidelines related to cholesterol screening and pharmaceutical treatment among adults. The intervention program would be randomly assigned at a primary care practice level and comparison would be made to control practice performance over a period of time. Outcome measures would be the percentage of patients who were eligible for screening and treatment who were appropriately screened and treated.

Diagnostic Study Example

- Goal:
  - To identify more accurate methods for disease screening and diagnosis that minimize cost and burden to the patient and healthcare system

- Examples:
  - Determine the sensitivity and specificity of a biomarker test to screen for prostate cancer.
  - Determine if a non-invasive imaging method is accurate, with acceptable sensitivity and specificity, relative to the gold standard method of tissue biopsy in soft tissue sarcoma.

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The goal of a diagnostic or screening study is to identify more accurate methods for disease screening and diagnosis that minimize cost and burden to the patient and healthcare system.

As an example, we would consider a study to determine the sensitivity and specificity of a biomarker test to screen for prostate cancer. The blood test, if accurate could be a feasible way to screen for cancer. A positive finding would then be followed by a more definitive diagnostic test.

As a second example, we may want to determine if a non-invasive imaging method is accurate, with acceptable sensitivity and specificity, relative to the gold standard method of tissue biopsy in soft tissue sarcoma. If found to be accurate, the non-invasive method would be preferred from the patient's perspective and also from a cost perspective.

Hypothesis-driven Studies

- Quantitative studies are driven by hypotheses
  - Specific aims are developed to test the hypotheses
  - Research design, research methods and data methods are selected relative to the stated hypotheses
  - Inference is drawn from the sample to a larger population or future situation

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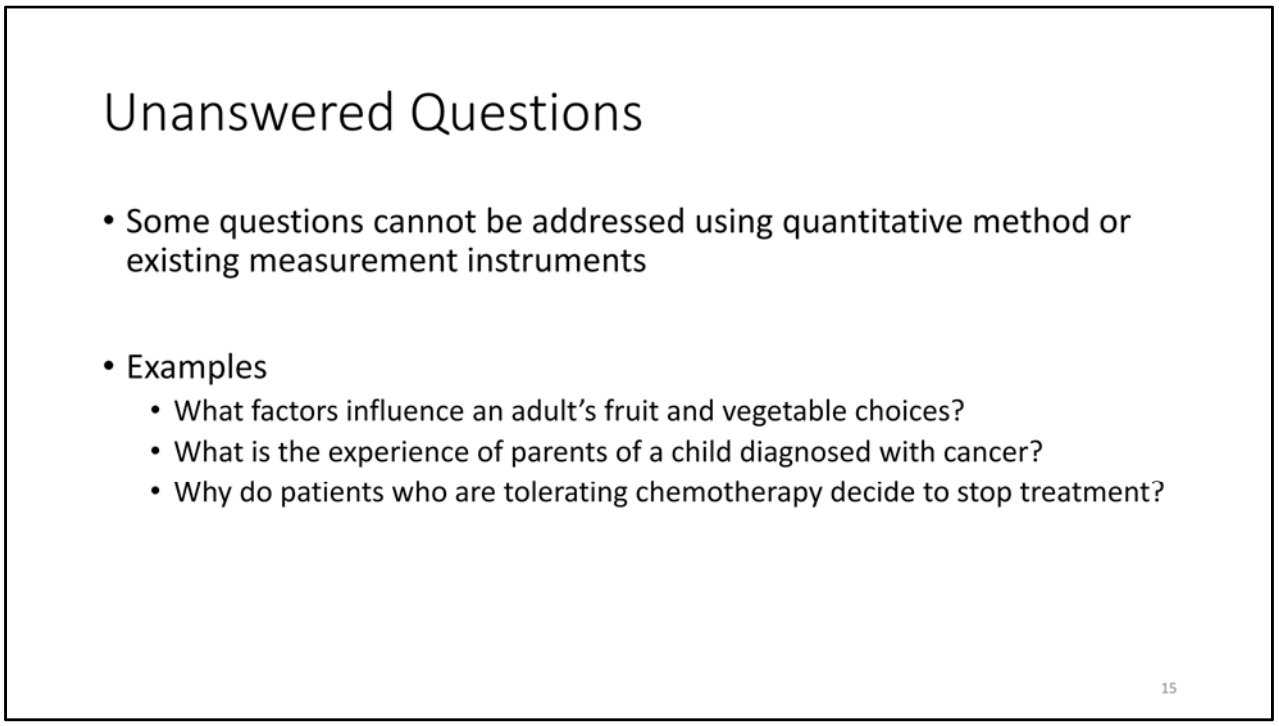
Quantitative studies are driven by hypotheses. Hypotheses must be measureable, testable and specific.

Specific aims are developed to test the hypotheses. By accomplishing the specific aims, we will test the hypotheses.

The research design, research methods and data methods are selected relative to the stated hypotheses and specific aims. The methods are dictated by the objectives of the study or evaluation.

Based on the collected data, inference or generalizations are drawn from the sample of data to a larger population or future situations, for example, in the setting of prediction.

In contrast to quantitative studies, qualitative research studies are designed to collect rich data, typically using open-ended questions and discussions, and then based on this information, hypotheses are formed. Qualitative studies can be used to address broad questions such as “why” or “how” or “what is the experience of … “.



Quantitative research and program evaluation projects provide valuable information about factors impacting health; however, there are limits to the types of questions that can be addressed using quantitative method or existing measurement instruments. When designing research or program evaluation projects, it's all about the question.

Let's consider a few examples.

We may conduct a telephone survey to ask members of our community about their dietary habits and preferences. Based on the quantitative study, we may find that a majority of adults are not eating the daily recommended amount of fruits and vegetables. This then raises additional questions, including what factors influence an adult's fruit and vegetable choices? We can't easily address this question using an additional survey because we don't know the range of factors that are influential. We don't have an initial hypothesis, instead, we need to conduct a qualitative study to collect rich information about preferences and decision-making processes to then generate hypotheses that could be addressed using a quantitative study.

As another example, in order to develop health navigation or support programs for parents of children with cancer, we may want to conduct a study to better understand "What is the experience of parents of a child diagnosed with cancer?". This information could not be

easily collected using a quantitative study and instead a qualitative approach is needed.

As a final example, based on an etiologic study, we may find that a high percentage of cancer patients stop their chemotherapy treatment course early even though they are not experiencing major adverse events. Using quantitative information, we would recognize that there are adherence issues, but we would need to conduct qualitative studies in order to understand “Why do patients who are tolerating chemotherapy decide to stop treatment?”.

These are examples of the “why”, “how”, and “what is the experience of …” types of questions that can best be addressed using qualitative research methods.

Summary

- Quantitative research questions
- Unanswered questions

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In closing, we reviewed the main types of quantitative research in public health and clinical health settings. These studies included etiologic, prognostic, intervention and diagnostic studies. The quantitative studies test hypotheses and the results of these hypothesis tests often generate additional questions that cannot be fully addressed using quantitative research approaches such as “why”, “how” and “what is the experience of …” types of questions. Instead, qualitative research studies are needed to address these types of questions.

In the next module, Part II, we will discuss features of qualitative studies that distinguish them from quantitative studies.

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