

recommend a website

(<http://www.rad.jhmi.edu/jeng/javarad/roc/JROCFITi.html>) which allows you to change data and watch the resulting effects on the ROC.⁸

Like the other tutorials in this series, we aim to give you a working knowledge of sensitivity and specificity in order to use it clinically. For further reading, refer to any of the books or articles in the reference list.

Correspondence: CS O'Gorman^{1,2}

¹Graduate Entry Medical School, and ²Centre for Interventions in Infection, Inflammation & Immunity (4i), University of Limerick
Email: Email: clodagh.ogorman@ul.ie

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Research Confuses Me: What is Qualitative Research & What is the Difference Between Grounded Theory and Phenomenology?

CS O'Gorman¹⁻⁴, AP Macken¹⁻⁴, W Cullen^{1,2}, J Saunders^{1,5}, C Dunne^{1,2,4}, MF Higgins⁶

¹Graduate Entry Medical School, and ²Centre for Interventions in Infection, Inflammation & Immunity (4i), University of Limerick

³The Children's Ark, University Hospital, Limerick

⁴National Children's Research Centre, Crumlin, Dublin

⁵C-Star, University of Limerick

⁶Maternal-Fetal Medicine, Mount Sinai Hospital, Toronto

What is qualitative research? Are there different types of qualitative research? Is qualitative research important in medicine? Is it not enough for me to understand quantitative research and its methodology? It is unsurprising that medical students might feel overwhelmed studying many different research study designs. Some might even do as some of us initially did: we "skim-read" the chapters on qualitative analyses. We reasoned that so much medical teaching and medical literature relies on numbers (p-values, confidence intervals, odds ratios, relative risks, etc), the "hard data". By comparison, qualitative research has more words and fewer numbers. The outcomes can sometimes appear "obvious", and we wondered if so much effort was needed or justified. However, the benefits of qualitative research in medicine are widely recognised and accepted. This extends especially to the Cochrane Database of Systematic Reviews, where systematic reviews of *qualitative* studies are conducted.

So what is qualitative research? In this tutorial, we will explain the methodologies and terminologies of common types of qualitative studies, using two research questions for illustration: firstly, what are the attitudes of pregnant women with breech presentation to external cephalic version (ECV) and why might one woman opt for ECV while another refuses it? Secondly, what is the impact/emotional burden of an extra diagnosis of coeliac disease in an adolescent with type I diabetes mellitus (T1DM)? In different types of qualitative studies, the phrasing of the research question will need to vary in order to try to adapt the question to the strengths of each individual study design. Many qualitative research terms (although defined in this paper under one study type) can actually be applied to qualitative methodologies.

External Cephalic Version (ECV) research question

Management of breech presentation is controversial, but common: 3% of term babies are breech.¹ The Term Breech trial showed increased safety for mother and baby if delivered electively by Caesarean Section². ECV has been used for many years as a way of changing the position of the baby, making it easier to have a normal delivery. However, less than 60% of obstetricians routinely

perform ECV,³ less than 70% would recommend ECV, and only 78% would have an ECV themselves⁴. So what do women want? This is an ideal area for qualitative research – a complex, emotive question, with cultural and personal factors that involve not only the woman but her partner, her family, her perceptions of pregnancy and delivery...As medical professionals, we are aware of some factors - concerns regarding safety and pain - but what else is hidden, unexplored? It has been shown that ECV is more successful if a woman undergoes either clinical hypnosis or neurolinguistic programming prior to the procedure⁵...but why is that? Qualitative studies empower us to explore these hidden issues and concerns.

Coeliac Disease research question

The dietary limitations of having both coeliac disease and type 1 (insulin dependent) diabetes mellitus (T1DM) are significant. In children with coeliac disease, with or without T1DM, the introduction of a gluten-free diet has been shown to improve their qualitative sense of well-being and vitality,^{6,7} as well as quantitative growth,^{6,7} haemoglobin⁸ and small intestinal mucosal histology.⁹ The impact on the child with diabetes of a co-diagnosis of coeliac disease is an ideal question for a qualitative study. So is the impact of recommending a gluten-free diet to a child who is already trying to adhere to a dietary plan for their T1DM. Children may be asymptomatic prior to diagnosis¹⁰ and this may lead to suboptimal dietary adherence.¹¹ Qualitative studies could highlight how health professionals can help to encourage dietary adherence.

Grounded Theory Approach

The grounded theory approach was developed in the 1960s¹², when sociologists studied the communication of health professionals with dying patients. Their results changed this communication forever from a culture of subterfuge to open discussion. Grounded theory is defined as "a way of thinking and conceptualizing the data"¹³ (in other words, forming new theories).

Let us re-phrase our diabetes-coeliac research question: "What theory might explain the feelings and perceptions of adolescents

with IDDM, after being diagnosed with CD also?" Grounded theory is both inductive and deductive^{12,14} – as the theory develops, hypotheses are tested and re-tested. Grounded theory starts with each patient (or "participant") discussing how they feel about their diagnoses and dietary restrictions. The researcher records and analyses all conversations with all participants, looking for similar ideas (or "themes"). These themes are systematically and individually coded. Participants are recruited until no new themes are developed. As the theory develops, researchers might *select* participants, to try to follow particular elements of the emerging theory ("theoretical sampling"). Participants must be willing and able to participate, able to express their own views, be aware of their diagnoses and aware of the implications to them and of their feelings about this.¹⁵ Following the coding of data, participants are asked if they agree with the results of the coding process ("triangulation"). As themes are extracted, new theory is created. The literature is then reviewed, to help develop the theory¹⁶. This is different to quantitative research where the literature review occurs prior to the study. The participants' social situation is also important. Researchers might include participants' diaries or daily dietary schedules, for example, school meals.

Ethnography

Ethnography evolved from anthropology and can be defined as any full or partial description of a group; "ethno" meaning folk and "graphy" meaning description.¹⁷ Its basis is the assumption that humans share enough characteristics to develop social relationships.¹⁸ Let's rephrase the coeliac disease research question: "How might the episode of a co-diagnosis of coeliac disease in a group of adolescents with IDDM be described in terms of their feelings, perceptions and behaviour?" By the definition of ethnography, we have to study the participants in their natural setting: this is difficult as there are no natural settings, outside the hospital, where adolescents with coeliac disease and diabetes congregate. Of course, adolescents with T1DM and coeliac disease attending specialist clinics all share characteristics and, so, are a society, but they might not communicate in this setting. A focus group of these individuals, prior to clinic or at a different time and location, might encourage communication. "Gate-keepers", all those involved with the participants (including parents, the paediatric gastroenterology and diabetes teams) should be included in ethnography, in order to develop a better understanding of the social situation of participants.

Ideally, ethnographic researchers should be immersed in the field: this might involve living with a relevant subject for a period of time. This is called being a "complete participant". It is obviously very difficult to do, but, when successful, it provides invaluable information. Alternatively, the researcher might be a "complete observer", recording interviews and taking field notes. In the focus group, the researcher must be a facilitator (encouraging the input of participants) while a co-researcher records non-verbal communications and other group interactions (description of situation and participants, personal reactions, etc). To reduce bias, pre-conceived ideas of the study should be disregarded before entering the field. As data are analysed, theories are developed and again tested against observations and participants are again asked to triangulate.

Phenomenology

A phenomenological study describes the "meaning of the lived experiences" for individuals relevant to a concept or the phenomenon.¹⁹ Phenomenography is a type of phenomenology where lived experience is described through writing (-graphy). Let's ask the ECV research question: "How might the lived experiences of individual women with a breech presentation who are offered ECV explain their perceptions, feelings and behaviour when making a decision about ECV?" As a subgroup of pregnant women, women with a breech presentation have a unique view. Using interviews or written accounts as a way of presenting the women's own views, describing their real life experiences,

exploring their perceptions and opinions and presenting it in their own words: these are the essentials of phenomenology¹⁹. Trust is an essential component of phenomenology (and all qualitative research) as findings should reflect the reality of the experience.

To explore the 'lived experience', there are several possible methods of data collection. Triangulation of data collected from a combination of semi-structured interview with open questions, the opportunity to express feelings on paper, diaries, and discussion with other family members would be appropriate. Extensive interviewing is an important feature of phenomenology. Interviews require "freedom", i.e., the researcher's willingness to digress from the question list and explore topics introduced by the participant. Extensive and accurate field notes are required.

Bracketing, i.e., disregarding any previous knowledge of the study topic, is important so that the interviewers' views do not bring biases to their data interpretation. The interviews are transcribed and non-verbal information added to the transcripts.

For data analysis and theory development, the researcher describes *his own* experience of the phenomenon, even if this is limited to medical information and pre-conceptions. (This is one of the differences between ethnography and phenomenology.) Then, he finds statements in the participants' interviews about ECV experiences, develops a list of nonrepetitive, nonoverlapping data, and groups these into "meaning units" – where similar inferences are classified together (e.g., anger / rage, shame / embarrassment). A description of experiencing the phenomenon is developed, and this formulates the new phenomenological theory.

Case Study

In medicine, we use case studies regularly, whether discussing an interesting case at rounds or publishing in the literature. Conventionally, a quantitative case study calls for an explanation of the condition, a thorough description of the context of the problem (or case), a discussion of important elements of the case and a summary of "take-home messages".¹⁹ In qualitative research, as opposed to a "medical" case study, multiple cases can be studied together in a single case study. In the case of the ECV question, data are collected from the woman in the form of transcripts of interviews, observations, audio-visual recordings of conversations, as well as supporting documents and reports, both from the pregnant woman and those surrounding her – doctors, midwives, nurses, family, friends, etc. A wide range of expectant mothers, with different viewpoints, might be interviewed. The most important part of conducting a case study is the collection of enough information to present a detailed description of the problem under study, whether those are the attitudes of the woman to the ECV, or the attitudes of many women to ECV.

A final point is that, in some cases, a full investigation into a particular area of research can involve both qualitative and quantitative approaches. Designs which incorporate both methodologies are termed 'mixed' designs and it is perfectly acceptable to plan studies involving both. These designs can incorporate qualitative and quantitative research occurring simultaneously or one followed by the other in any order, and can often result in very rich and rewarding holistic research.

Summary

To answer either of the research questions that we posed at the start of this paper, we could choose any of the summarised methodologies, but our personal preference would be phenomenology, because it defines the "lived experiences" of a group of participants. There is generally an exhaustive amount of work involved in all qualitative research, but certainly this benefits topics where there is very little already known. In fact, this is one of the great strengths of qualitative research. This could direct future research – both qualitative and quantitative. 'Mixed' designs incorporating qualitative and quantitative approaches are also possible.

Correspondence: CS O'Gorman^{1,2}

¹Graduate Entry Medical School, and ²Centre for Interventions in Infection, Inflammation & Immunity (4i), University of Limerick
Email: clodagh.ogorman@ul.ie

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What is the Difference Between Deontological and Consequentialist Theories of Medical Ethics?

CS O'Gorman¹⁻⁴, AP Macken¹⁻⁴, W Cullen^{1,2}, C Dunne^{1,2,4}, MF Higgins⁵

¹Graduate Entry Medical School, and ²Centre for Interventions in Infection, Inflammation & Immunity (4i), University of Limerick

³The Children's Ark, University Hospital, Limerick

⁴National Children's Research Centre, Crumlin, Dublin

⁵Maternal-Fetal Medicine, Mount Sinai Hospital, Toronto

Every day, every doctor, senior or junior, faces ethical decisions. From the moment you start seeing patients on the wards, there are decisions to make. And as every decision you make can/will have a significant impact on the lives of so many people – your patient, your patient's family, you, other healthcare professionals – medical ethics can give you a framework to help you to approach some of these decisions. The aim of this brief tutorial is to introduce some theory to frame your practice.

Why is patient confidentiality so important? Do all patients, even children, have rights? What about those with psychiatric disease? If we only had limited funds, would we treat diabetes or cancer, or fund in vitro fertilisation for infertile prospective parents? Illustration of some ethical principles will help us try to answer these questions. Ethics is a branch of philosophy. It is based in morality and it allows us to try to differentiate right from wrong, in the framework of rules or standards of good or moral behaviour.

What is the difference between "right" and "wrong"?

Should be easy to answer, right? Wrong! Some people believe that ethics is not about differentiating right from wrong, but that ethics is a matter of opinions. Some people use information from their backgrounds to differentiate right from wrong; these backgrounds can be based on the beliefs of the family with whom they grew up; or on religious, cultural or other societal beliefs.

Some base their beliefs on what they have been taught about specific ethical theories or on what they believe the majority would choose (or "what would others do in this situation?") Regardless, each individual's beliefs or choices are equally relevant and important. This is called ethical relativism; it allows us to tolerate other people's beliefs and choices, without losing track of our own.

One possible definition of right and wrong could be the balance of benefits and harms – the right action is likely to lead to more benefits than harms, and the wrong action is likely to lead to more harms than benefits. This is commonly used in medicine when weighing up options.

Are "right and wrong" a bit like "pleasure and pain"?

Only sort of. But there are ethical theories that can be explained using the concepts of pleasure and pain – the consequentialist and utilitarian theories.

Consequentialism ("The end justifies the means")

Here the end or the consequence is more important than the means used to achieve that end, or that an action is "right" if it leads to the "best" outcome. Of course, that depends on who and how defines "best"! This is a problem with consequentialism – it does not define which consequences are morally most important.