**Title**: From the Horse’s Mouth: Qualitative methods for Equine Veterinary Research

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**Summary:**

Qualitative research methods are becoming an increasingly well-used tool in the equine veterinary field, given their usefulness in increasing our understanding of little-understood issues around human behaviour. However, qualitative methods are often unfamiliar to researchers and veterinarians in the veterinary sciences, and are sometimes regarded with suspicion. In this primer, we provide a pragmatic introduction to qualitative research, describing: in which situations qualitative methods may be applied; what constitutes qualitative data and how it is collected; an introduction to common methods of data analysis; and the question of what constitutes “quality” in qualitative research. As such, this primer will provide support to those who are reviewing papers using qualitative methods, as well as researchers embarking on studies which use qualitative methods.

**Main article:**

**Introduction:**

In the past decade, qualitative research methods have become a recognised tool in veterinary sciences for researching little understood issues, ranging from how owners make decisions about horse health, to providing a better understanding of the horse-owner relationship. Use of these methods have yielded insights unlikely to have been obtained through quantitative methods: for example, they have uncovered the obesogenic environment around horses which make it difficult for owners to keep their horses at an appropriate weight, the reasons owners might not call the vet in the event of colic1, and the difficulties farmers face in implementing lameness prevention measures2. For professionals working in veterinary practice, these findings may help bridge the gap in understanding why people act in ways which sometimes appear confusing or nonsensical, and ultimately may improve the animal care.

Nevertheless, qualitative research methods remain far less commonly applied than quantitative methods, and are sometimes regarded with suspicion or are poorly understood. This article builds upon a previously EVJ primer3 which reflected on why qualitative methods might be applied. Here, we introduce some of the core concepts of qualitative research methods to equip readers with a better understanding of what constitutes “quality” within qualitative research.

Qualitative research refers to analysis which assesses the *qualities* of a phenomenon, rather than the quantities of it; this makes these methods particularly useful for understanding the “how” and “why” of an issue, rather than the “what”4. For example, if we wanted to understand more about equine obesity, quantitative studies might provide insight into how many horses are obese in an area, what the risk factors are for obesity, and how levels of obesity fluctuate over time. Qualitative analysis, on the other hand, might make use of interview or focus group data in order to understand how owners perceive and identify an overweight horse, and why the social and physical environment might make it difficult for them to keep their horse at a healthy weight. These approaches might explore the lived experience of someone experiencing the phenomena under study; the motivations of the people involved, what factors in the environment or society may have led to the phenomena happening, and the extent to which peoples’ attitudes about the phenomena match scientific understandings.

Qualitative and quantitative approaches, therefore, may complement one another by providing contrasting data on different aspects of a phenomenon, which is why studies often combining these approaches, so-called “mixed methods”. For example, interviews may be used to better understand the issue under study, providing important details needed to construct questionnaires to find out more about the phenomenon on a wider scale (e.g. how often it happens, to whom, etc). Alternatively, qualitative approaches may enable development of richer explanations of findings from a questionnaire.

**Qualitative Data**

Qualitative analysis makes use of data which is different to that typically analysed numerically; often qualitative data refers to text (for example, transcripts from interviews or focus groups; text from diary entries or survey data), but could also usefully comprise photographs, videos, drawings, or observations of participants. These are usually “real world” data; they are derived from participant(s) in naturalistic settings, rather than in laboratory conditions as in some other forms of social research4,5.

The type of data to be collected should reflect the intended aims of the project: for example, one might collect data from individual interviews if the research question reflects a need to understand the experiences of people experiencing the topic under study at one moment in time, and diaries might be useful if it is important to understand how the phenomena is changing over time. However, if the researcher wanted to understand how the environment was influencing peoples’ behaviour, then participant observations (for example, using ethnographic methods to engage with participants over time) or participant photo-diaries (providing visual records of the issue) may be useful.

**Qualitative data collection and sampling**

Whichever data are used, high levels of rigour are essential, as would be expected for a quantitative study. However, the concept of rigour varies somewhat between quantitative and qualitative approaches. These differences arise due to the differing aims of these approaches: while quantitative methods aim to provide precise and generalisable findings using relatively large random samples, qualitative methods use smaller samples which are studied in a great deal of detail, and thus do not necessarily claim to be representative of a population. Instead, qualitative data aims to generate theory which may help to better understand the phenomenon under study6. Therefore, rather than seeking a representative sample, qualitative approaches should seek to recruit participants who might shed light on different aspects of the issue in hand, rather than simply seeking a random sample. For example, if researchers were studying horse owner perceptions of euthanasia, a qualitative researcher might purposefully recruit people with a range of experiences around euthanasia, and include people who have not had a horse euthanised, in order to develop a rounded and holistic understanding of the issue7. Further, in order to uncover unexpected aspects of the phenomena under study, it is common for qualitative researchers to adjust their recruitment sampling as they move through a project, rather than planning upfront to have a certain number or type of participants.

Qualitative projects often, therefore, often use “purposive sampling”8, beginning with a few key informants and then including more and more informants until “saturation” is reached; that is, the point at which new data is not yielding new insights into the phenomenon of interest; instead new data feels repetitive and familiar to the analyst 9, despite inclusion of members of the target population believed to be most likely to provide divergent data. While the number of participants required to reach saturation is different for every project and depends on the scope of data required, for semi-structured individual interviews (the most common type of qualitative data) saturation is often reached at between 15-45 participants, provided the target population is not to diverse10, (examples: Furtado et al., 2020a; Lynden et al., 2018; Scantlebury et al., 2014).

For this reason, in qualitative research it is common to collect data and conduct analysis concurrently, in order to allow the researcher to reflexively alter their sampling strategy depending on the results found so far in a project, and for the study sample to be considerably smaller than many quantitative studies7.

**Data analysis: overview**

Analysis of qualitative data requires very different methods to those which might be applied to quantitative methods, though the overriding aim of analysis is similar: to reveal patterns in the data which might help us to better understand the issue under study, and contribute to theory about that issue.

Of course, in the same way that “quantitative research” and “statistics” are extremely wide umbrella terms for many different types of analyses, “qualitative analysis” may be undertaken in many different ways. While it is beyond the scope of this primer to list a whole range of qualitative methods, here we introduce key concepts.

Firstly, qualitative analysts must decide whether they aim to look for specific patterns that they *expect* will be of particular interest in the data, or whether to allow the data to “speak” for itself, by trying to look at the data, without preconceptions, as a ‘naïve' observer13,14. For example, with the issue of euthanasia, a researcher may choose to look for specific themes about which they are interested; perhaps how owners made decisions around end of life and where they found information about it. In this instance, the researcher is applying their own knowledge of the issue, and will focus on those areas of interest. While this yields interesting data, there is a potential for unexpected items of interest to be entirely missed because of the researcher’s preconceived knowledge.

Therefore, qualitative methods often take a more iterative approach, where preconceived ideas are “suspended” and the researcher simply analyses *all* the data according to the themes that arise from the data rather than according to their own ideas. While this approach is more time consuming, it is generally considered more rigorous, particularly in situations where little is known about the topic under study.

Further, just as in statistical analysis, the researcher must decide the extent to which the data is to be analysed. The more simplistic approach is to *describe* the experiences of those who have contributed to the data. However, building upon such findings, more complex analyses go further and aims to generate theory to explain the phenomenon under study.

**Data Analysis: the processes of coding**

Whichever specific approaches are used during to analysis, the process usually involved “coding” the data. Analysis usually begins with the researcher familiarising themselves with the data, by reading through it carefully and making notes about their initial impressions. Thereafter, very close reading of the text enables it to be split into particular “codes” that aim to capture the meaning of words, phrases and sentences. We can use the following (fictional) sentence as an example:

“*I am so confused about what to feed my horse. I am very worried because she is losing weight fast and I can see her ribs*, *but there is so much conflicting info about what to feed her that I don’t know where to even start, I’m so lost”*

 This text might be usefully split into the following component parts, relating to the different concerns reflected by this owner:

|  |  |
| --- | --- |
| **Sentence components from transcript** | **Possible codes** |
| I am so confused about what to feed my horse. | Confusion around feeding |
| I am very worried because she is losing weight fast and I can see her ribs | Health concerns around underweight |
| There is so much conflicting info about what to feed her | Confusion around feeding  |
| I don’t know where to even start, I’m so lost | Feelings of futility |

 Table 1: fictional example of how initial coding might happen

After the researcher has coded one or several texts, they will begin to find that some codes are gaining particular importance; for example, there may be many instances of “confusion around feeding”; indeed, this is likely, as “confusion around feeding” is a vague concept. At this point, the researcher may go back through their codes, and may refine the meanings. For example, above we have two sentences labelled “confusion around feeding”, but only one of them mentions “conflicting advice”. Noticing this discrepancy, the researcher may refine the codes and group together all their items around “conflicting advice” to create a new theme under this name.

This process is iterative and ongoing, and it is normal for it to initially feel messy, with clarity developing as the meanings are gradually uncovered and the links between different themes become evident. As more data is added, the themes are further refined and eventually grouped into overriding categories; for example, in the example above, once multiple sources have been coded, there could perhaps be an overriding category of “being a responsible owner” which would contain sub-themes related to “feeding the horse appropriately” “monitoring health” and so forth. Again, this categorising of the themes happens gradually and iteratively. Often, qualitative researchers advocate the use of post it notes or other movable, creative media in order to allow them to easily alter the structure of the categories and themes found in the data.

The eventual outcome of this coding should be a clear set of categories and sub-themes, each of which contain ready examples of the theme under study. Each theme and category should be clearly described, and relate to the data within it. Often, researchers will use a diagram such as a “conceptual model” in order to illustrate the links between the data(for examples, see: Furtado et al., 2020a; Lynden et al., 2018; Scantlebury et al., 2014).



Figure 1: Example of a theoretical diagram*: Model of horse-owners’ approaches to management of a colic episode* (Figure under creative commons license from Scantlebury et al1)

**Is this really scientific?**

This iterative process often appears uncomfortable to those familiar with quantitative methods, who may fail to see familiar scientific rigour of this process – particularly because it relies on the interpretation of the individual who is analysing the data. Theoretically, such interpretation could be very different between individuals and would also depend on the level of detail that the researcher entered into.

In practice, analysing similar data often does lead to similar themes being uncovered; for example two separate research teams studying the importance for dog owners of walking their dogs identified the same sub-types of walks, even using the same terminology to describe them15,16.

Nevertheless, there are various steps that qualitative researchers may take to acknowledge and decrease the potential impact of this individual interpretation. The first step is to acknowledge the individuals’ own understanding of the issue and approach to understanding of knowledge; it is usual in qualitative work for the authors’ own thoughts and experiences about the issue, and the potential impact on their interpretation, to be overtly acknowledged17.

Secondly, researchers may work together to code data in ways that are replicable; this could simply be a case of “sense checking” coding with another researcher, but is also sometimes achieved by having two separate coders complete their analysis of a text, then working together to combine their codes17. Sense checking can also be achieved by checking the ongoing analysis with the participants who took part in the study, to ensure that the analysis reflects their experience.

**In pursuit of truth**

One frequently cited concern of quantitatively-minded researchers who are attempting to understand qualitative studies is the issue of “truth”; if people tell us during an interview that they are feeling or behaving in a certain way, how can we know that this is really what they think or do, rather than the socially acceptable answer? Further, how can this qualitative analysis uncover “truth” when it is so open to the interpretation of the individuals conducting the coding?

These queries highlight the philosophical difference in understanding the world around us via science. Quantitative research is often ascribed to a positivist mindset: that we there is an objective truth around us, which can be uncovered through scientific enquiry. However, such an approach is somewhat limited, because it cannot necessarily account for real-world differences which might occur in the messiness of lived experience. To give a classic example, consider the concept of gender. Positivist approaches might suggest that there are two biological sexes; male and female, and that each of those sexes is made up of different aspects: hormones, physical attributes, bodies. However, this approach does not account for many of the factors which affect our experience of gender in the real world. We are continually shaped by our culture, for example, by our society’s expectations, and by the role models around us. For example, some cultures do not even define “male” and “female” as binary categories, rather considering gender to be a fluid concept18. This highlights how our Western understanding of gender as binary categories is simply a reflection of the culture within which we have lived.

Therefore, in contrast to the positivist approach, qualitative research is usually ascribed to a “constructivist” approach, which posits that we construct truth within our societies, cultures and families. What it means to be male or female depends where we grow up, how our families are constructed, and on our sense of identity; we constantly negotiate and reinforce gender through our discourse.

The same is true of animal care, and this is what sociological enquiry aims to uncover. In an interview about the care of elderly horses, an owner might tell you that they do a wide range of things to maintain their horses’ health. We know that people are complicated; they say they do things that they don’t really do, and behave in ways they don’t agree with19. What is important to the qualitative researcher is *why* the person is saying those things. How are they constructing “good care” for an elderly horse? How are they constructing themselves as a responsible owner? This is what is important for the qualitative researcher who wants to understand the priorities and experience of horse owners.

If the qualitative researcher wants to know what this person does *in reality*, they would need to observe the behaviour of that person, or group of people, as well as interviewing them. This process of observing over time, usually coupled with multiple interviews, forms a key part of the research method known as ethnography, and is well-accepted for gathering in-depth data about how and why people act as they do in the real world.

**For reviewers**

This paper has aimed to clarify many of the important concepts of qualitative research in order to enable reviewers to assess whether the study has been conducted appropriately. Although useful checklists for reviewing/reporting qualitative studies are well-discussed elsewhere20, the key questions reviewers should ask themselves are:

* Were the aims of the study adequately cited, and did the data collection methods match those aims?
* Is the participant recruitment strategy explained, particularly in terms of the number of participants and their characteristics?
* Has the researcher explained how the data were analysed and how they ensured quality in that process?
* Are the results *descriptive* or *analytical*? Descriptive data will simply explain the experiences of the participants, while analytical data will have further examined and contextualised these experiences in order to generate theory.
* Is the coding framework described, and supported with data (usually in the form of quotes)? Coding frameworks are usually presented in diagrammatic form, or as subheadings: it should be clear how each part of the framework links to the other parts. Each should be well supported with relevant quotes or examples of participants’ experiences.
* What do the results contribute to the field? Good sociological study should provide significant insight into the phenomenon, allowing readers to understand it in a new light.

**Conclusion**

This primer has presented the core concepts of how and why qualitative research is conducted in the way that it is, to enable those unfamiliar to better assess the quality of research. We also provide a list of recommended reading for those who with to find out more about these methods and their application.

Qualitative methods have proved their worth in the field of animal welfare many times over, having revealed many useful insights into the experiences of animal carers; better understanding of the issues in animal welfare can lead to better interventions to improve it. We hope that this paper has allowed viewers and readers to more confidently assess “quality” in qualitative enquiry, ensuring that research is robustly executed and reported and, in turn, better understood, in order to maximise the benefits to equine health and wellbeing.

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