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# Critiquing research papers? Neigh bother, any RVN can do it!

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**ABSTRACT:** This article starts from the premise you don't have to be a scientist to be able to effectively critique research papers. Registered Veterinary Nurses (RVNs) must evaluate research papers for their internal quality (how good the paper is) and its relevance to the clinical environment the nurse intends to apply the findings to. Three examples are used to demonstrate how an examination of the study methodology can affect the willingness of the RVN to accept the reported findings or allow it to affect clinical decision-making.

## Introduction

The Jerry Springer Show once had a male guest on it who proudly announced that he had married his horse. If asked to evaluate this man's score on the "Marriage material-o-meter", the discerning VNJ readership would rightly rate him as very poor quality. Likewise, if provided with a range of potential partners varying across traits such as illicit drug use, alcohol consumption and criminal activity, most of us would probably place the thieving, alcoholic drug addict near the bottom of the scale. By contrast, if given a list of potential partners varying across various benign traits or hobbies, we would probably start to see divergence of opinion as each person looks for a partner that would "suit their likes and dislikes". Critically evaluating research papers is essentially the same process as evaluating someone's marriage qualities. Effectively, the RVN wants to know two things:

1. Is the quality of this research good? (Is this potentially a good partner *for someone?*)
2. Is this research relevant to the clinical setting I wish to apply it to? (Is the potential partner suitable *for me?*)

And, just as you do not need to have been married in order to be able to evaluate suitable marriage material, you do not need to be a scientist to evaluate scientific research. What you do need is a bit of common sense, an enquiring and critical

mind. Some clinical knowledge and experience in the area you are considering applying the research findings helps too. Sound familiar? It should, these are all skills that RVNs have plenty of!

## But why bother? I just want to be a veterinary nurse

The RCVS position paper on Evidence-based Veterinary Medicine (2013) states: "The RCVS expects ... veterinary nurses to make clinical decisions ... based on the *best available evidence* ... in order to be considered fit to practice, veterinary practitioners hold the *responsibility* to ground their decisions on *sound, objective and up-to-date evidence* ...". Thus, there is a requirement that the RVN not only embrace the use of evidence, but also that they use their judgement as to the quality of this evidence. While confining the search to peer-reviewed journals may provide some confidence as to the quality of the research published, the RVN should not rely on this and assume that the research *is* good quality. At the most extreme, 120 spoof articles that were computer-generated nonsense made it through the peer-review process and were published and only later spotted and removed (Van Noorden, 2014). However, no research methodology is perfect and the researchers tread a thin line between what is practical or feasible to do and what

will yield the best-quality scientific data. This results in papers of widely differing scientific quality being published and the RVN must decide whether these scientific imperfections make the results worthless or whether the findings still provide useful and informative evidence that could be used to inform clinical practice.

## Get familiar with the basic structure of a research paper

Scientific studies vary considerably in design and approach. Studies may be qualitative or quantitative; observational or experimental. You will come across approaches such as cross-sectional, case-control, cohort, randomised clinical trial, systematic reviews, and so forth. However, by scientific convention, when publishing the findings of these studies, almost all research papers will follow the IMRAD format: Introduction, Methods, Research and Discussion. This will be preceded by an abstract which is basically a summary of the research paper. Following the discussion there will often be an acknowledgements section followed by a list of references. It is always worth reading the acknowledgements section to find out who funded the research and whether the funders had any other influence on the study design. Research funded by an organisation that could have a vested interest in the outcome should be read cautiously.

For each type of study and for each section of the paper there are some standard factors to consider. It is beyond the scope of this paper to outline and discuss the issues to consider and questions to ask when reviewing papers that utilise different types of study design. However, the reader would benefit from reading the following resources:

- Dean, R. 2013. How to read a paper and appraise the evidence. *In Practice*, 35(5): 282–285
- RCVS Knowledge Summary toolkits. These provide guides to identifying what type of study you are critiquing and what sort of factors should be assessed when evaluating the worth of the research. These are free to access and are available from: <http://knowledge.rcvs.org.uk/evidence-based-veterinary-medicine/ebvm-toolkit/>

## Some general pointers for reading a paper

- Take your time when reading a paper. Don't expect to read it fully in five minutes.
- Read the abstract first and assess whether this research looks like it might be useful to whatever clinical question you are currently investigating (i.e. is it a good potential partner *for you*). If it is not, move on without reading the rest of the paper. A good abstract will clearly state the aims of the study and/or the hypotheses that the author investigated, provides an outline of the methods and will outline the key findings.
- Skim read the paper the first time to get a feel for what it is about.
- Don't be put off evaluating the paper if there are parts you don't understand. Ask for help from others and review the parts you can. Reviewing gets easier with practice.
- Then, go back and re-read the paper and have a pen and paper by your side. This time focus primarily on the aim of the study, the methods and the results. These are the most important sections of a paper. Jot down any thoughts you have as you read through these sections.
- Identify the type of study that has been carried out and consider where this would potentially place the study in the hierarchy of evidence (see RCVS Knowledge tool kit number 3).
- Keep firmly in your mind at all times the following rules:
  1. The aim(s) of the study must be clearly defined and testable.
  2. The methods used by the study must be appropriate to answer the aims of the study (i.e. is it a good partner *for someone*).
  3. Don't let the results inform or influence your nursing practice unless you are satisfied that
    - The methods used are appropriate and of satisfactory quality (i.e. it is a good partner *per se*)
    - They are relevant to your clinical setting (i.e. it is a good partner *for you*).

Three examples are now shown to demonstrate how a critical reading of a paper's methodology may affect the decision-making of an RVN in relation to products that might be stocked or recommended.

### Example one

A client attends your nurse clinic with their German Shepherd dog. They show

you a research paper that someone uploaded to a GSD Facebook group they are a member of. You read the results and note that this paper (Pipan *et al.*, 2012) claims that dogs fed kibble are 1.7 times more likely to experience a GDV than dogs that are not fed kibble. They are worried because they are feeding the kibble diet that the veterinary practice recommended. Should your practice stop recommending kibble diet to clients based upon this finding?

You remember the golden rule: don't use the results unless you are happy with the methods. You turn back to the methods. The aim of this study was to investigate risk factors for GDV in dogs and they used a questionnaire open to owners of dogs of any shape, size or type. You draw upon your veterinary nursing experiences and knowledge in relation to GDV and kibble use and wonder two things:

1. Why did the authors decide to study the whole dog population? Why not just large and giant breeds?
2. Given that large and giant breed dogs are more expensive to feed *per se*, and wet food diets are more expensive to feed than kibble diets, are large and giant breed dogs more likely to be fed kibble *anyway*? And, if they are, could the result that GDV dogs are more likely to eat kibble simply be an artefact of the fact that GDV dogs are usually also large or giant breeds?

How frustrating, you think, unhappy that the authors did not compare the risk of GDV between kibble- and non-kibble-eating large and giant breed dogs. You conclude that, while it cannot be ruled out that there is a link between kibble feeding and GDV risk, this has not yet been adequately demonstrated as other factors could easily explain the findings. You reassure the client of this and resolve to look for other papers in this area as part of your targeted CPD requirements.

### Example two

As you continue to research GDV risk factors, a Great Dane-owning client comes in and tells you about a "Go Slow" bowl they saw while at Crufts and that they think you should stock and recommend to clients. The manufacturers claim that eating slowly reduces the risk of GDV in at-risk dogs. You decide to consult the literature before encouraging the practice to stock and recommend this product. The

first paper you come across is a paper by Theyse *et al.* (1998). They state that rate of eating was not a risk factor for GDV in Great Danes. You chant the golden rule mantra and turn to the methods to see *how they measured rate of eating*. You notice several things that concern you:

1. They searched clinic records for GDV cases at the vet practice up to 13 years previously and contacted these owners to ask them about how quickly their dogs ate their ration. Reflecting on this, you wonder if you could accurately remember this information for a dog of your own that may have died 13 years ago.
2. The authors asked owners whether their dog ate its ration in less than 5 min (fast eater) or more than 5 min (slow eater). They also asked the owners how many meals a day the dog was fed (once, twice, more often), but did not report adjusting their speed of eating estimate based on number of meals. You start to wonder if even slow eaters would consume the ration in less than five minutes, especially if it was only a small meal because they were fed twice a day or more often.

You conclude that the method these researchers used to assess speed of eating was not sensitive or precise enough to yield useful data and decide not to allow these results to influence you. You decide to search for other papers before recommending that the practice should or should not stock “Go Slow bowls” as a potential preventative product.

### Example three

You notice that the “Go Slow bowls” recommended by the client in example two are also promoted as being fun for dogs. You come across the following research poster by Buckley and Lees (2016) in which the authors claim that dogs prefer to eat out of a dog bowl rather than a Go Slow bowl. Back to the methods you go. You notice that the researchers used a blue dog bowl and a green Go Slow bowl. The authors state that feeder colour represents a confounding variable when interpreting the findings. You realise that, by this, the authors mean they have no way of knowing for definite whether the dogs picked the dog bowl because they preferred a bowl they could eat quickly out of *or* because they preferred to eat out of a bowl that was coloured blue. This gets you thinking:

1. Why didn't the researchers use the same colour for both the regular bowl and the Go Slow bowl? Was this an experimental oversight or were there practical considerations?
2. Did the bowls differ in other ways that might have influenced the dogs' preferences? For example, were they made out of different types of material? Did they reflect light in different ways? Could the dogs see the bowls equally well?

You start to wonder whether you can accept the authors' interpretation as the most likely explanation for the results. This is important, as it may affect whether you think Go Slow bowls are unwanted by dogs during meal times, and this may affect the advice you give your clients.

Hopefully, these examples will provide the RVN with ideas for how a research paper can be critiqued in a way that is clearly relevant to informing clinical practice. Of course, this is a time-consuming process so there is a limit to the number of papers an individual RVN can critique. The enquiring RVN is urged to consider publishing the results of their critical evaluations which will further wider clinical practice across the profession and provide documented evidence of personal development and clinical governance.

## Conclusion

In conclusion, critiquing research papers is a skill that all RVNs possess and, like any skill, improves with practice. Drawing upon clinical experience, knowledge and common sense will allow the VN to meaningfully evaluate the quality of research papers, and can provide documented evidence that the RVN is striving to meet the requirement to use the best-quality evidence to inform clinical decision-making.

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