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The veterinarian's role in end-of-life management of animals:
An exploration of veterinary training and the perspectives of
New Zealand cat owners

A thesis presented in partial fulfilment of the requirements for the
degree of

Doctor of Philosophy

in

Veterinary Science

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New Zealand

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Abstract

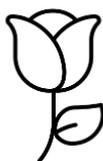
Domestic cats are living longer and more of them are living with chronic conditions. It is up to the owner(s) to make the decision about when, and how, to end the life of their cat. Owners may find such end-of-life decisions difficult, as they are influenced by many factors relating to their cat and to themselves. Owners often involve their veterinarian in the decision-making process; therefore, it is essential that veterinarians understand the role they play in end-of-life management of animals. To ensure veterinarians are effectively supporting owners to make end-of-life decisions, there is also a need to know how veterinary students are taught relevant topics and skills. The central question this research aimed to answer was: 'what is the veterinarian's role in end-of-life management of older and chronically ill cats in New Zealand?' Study 1 investigated how aspects of end-of-life management – technical euthanasia skills, end-of-life decision-making, and grief management – were taught to Australasian veterinary students. Study 2 then explored the role veterinarians play in end-of-life management from the perspective of owners of older and chronically ill cats, as well as how those owners made the decision to end their cat's life.

Study 1 demonstrated some gaps that, if filled, could improve veterinary training in end-of-life management of animals. Technical aspects of euthanasia were not taught consistently for companion animals and this needs to be improved to ensure new graduates meet client expectations – that is, they are as competent as my cat owner participants assumed. There also appeared to be gaps in teaching

end-of-life decision-making relative to what was important to cat owners. Owners expected their veterinarian to be the professional or 'expert' when it came to knowledge of animal health and welfare, but not all veterinary students were taught how to assess animal welfare or quality of life in the context of end-of-life decisions. In contrast, teaching of grief-related topics left only a few gaps to fill. Grief management teaching best reflected many of the features my cat owner participants wanted from their veterinarian, and particularly the human-centred themes taught to students. Most of this grief management teaching was performed by student counsellors and psychologists in earlier (preclinical) years. This means these human-centred themes may not have been explicitly linked to the decision-making process, and, more importantly, to the veterinarian's role in end-of-life management. Without explicit alignment, veterinary students may be left thinking that veterinarians have only a limited role, or even no role at all, in managing their clients' emotions and that this should be left to trained professionals. However, my cat owner participants emphasised the important role their veterinarian had played in the end-of-life process, suggesting that training, in New Zealand at least, is effective in this regard.

Significant methodological developments in this research include designing and conducting in-depth interviews using social science methodology, in addition to the analysis and interpretation of qualitative data. Future studies should compare owner and veterinary perceptions of the same euthanasia event to obtain a detailed picture of the veterinarian's role in end-of-life management of animals.

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“Strong women don’t have attitudes, they have standards”

(Author Unknown)

From the bottom of my heart, thank you Ngaio. My cheerful Irish supervisor also deserves special mention. I spent many long hours in Kevin’s office waxing lyrical about a variety of wonderful topics. He was always on hand to remind me of my place in the world and that it’s never that serious ‘gal’. Of course, thanks to Chris for introducing me to social science research. It was hard to change a traditional scientist into a social science researcher, but I hope I have done you proud.

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Veterinary Association and Helen Beattie as well as The Veterinary Council of New Zealand and Seton Butler, for their support and for sharing details of my studies to the veterinary community. And a big thanks to New Zealand cat owners for their participation and enthusiasm for my research. I hope I have done your words justice.

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And finally, this research would not have been possible without the unwavering support of my husband, David. No words can adequately describe how much you mean to me. You are my favourite.

Dedication

This thesis is dedicated to the many animals I have had the pleasure of interacting with during my life...



...with a special dedication to Pearl. She was my first cat and the best cat. She taught me how special cats are and how hard it is to say goodbye. She made me want to become a veterinarian. But most of all, she was my friend.

To the companion animal veterinarians out there, this thesis is also for you. You have one of the toughest jobs in the world, but also one of the most important.

And to everyone who interacts with animals:

“Do the best you can until you know better. Then when you know better, do better”

(Maya Angelou)

Publications

Publications related to thesis research

- Littlewood, K. E., Beausoleil, N. J., Stafford, K. J., Stephens, C., Collins, T., Fawcett, A., Hazel, S., Lloyd, J. K. F., Mallia, C., Richards, L., Wedler, N. K., & Zito, S. (2018). Exploring how end-of-life management is taught to Australasian veterinary students. Part 1: technical euthanasia. *Veterinary Record*, 183(691), 1-10. <https://doi.org/10.1136/vr.104775> (Chapter 4)
- Littlewood, K. E., Beausoleil, N. J., Stafford, K. J., Stephens, C., Collins, T., Quain, A., Hazel, S., Lloyd, J. K. F., Mallia, C., Richards, L., Wedler, N. K., & Zito, S. (2021). How decision-making about euthanasia for animals is taught to Australasian veterinary students. *Australian Veterinary Journal*, 1-10. <https://doi.org/10.1111/avj.13077> (Chapter 5)
- Littlewood, K. E., Beausoleil, N. J., Stafford, K. J., Stephens, C., Collins, T., Fawcett, A., Hazel, S., Lloyd, J. K. F., Mallia, C., Richards, L., Wedler, N. K., & Zito, S. (2020). How management of grief associated with ending the life of an animal is taught to Australasian veterinary students. *Australian Veterinary Journal*, 98(8), 356-363. <https://doi.org/10.1111/avj.12960> (Chapter 6)
- Littlewood, K. E., Beausoleil, N. J., Stafford, K. J., & Stephens, C. (2021). “What would you do?”: How cat owners make end-of-life decisions and implications for veterinary-client interactions. *Animals*, 11(4), 1-20. <https://doi.org/10.3390/ani11041114> (Chapter 7)

Other publications completed in parallel with thesis research

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Guidelines for implementing a low-cost volunteer desexing skills training programme for veterinary and veterinary technology students. *Journal of Veterinary Medical Education*, 47(1), 27-38.

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CHAPTER 1: Introduction



This research centres around the veterinarian's role in end-of-life (EoL) management of animals, with a particular focus on end-of-life decision-making for domestic cats in New Zealand. Two key aspects of this topic are addressed in the research comprising this thesis: (1) teaching of topics relating to EoL management for various animal species to veterinary science students and (2) clinical practice relating to EoL care by veterinarians interacting with owners of older or chronically ill cats.

The thesis begins with a brief overarching literature review chapter which situates various subtopics including quality of life and its assessment, human-animal relationships, models of veterinary-client relationships, legal and professional obligations of veterinarians, veterinary competency, technical euthanasia skills, decision-making, and grief management, within the broader context of this field of research (**Chapter 2**). The chapter that follows is dedicated to describing the overall methodology of the research in this thesis in relation to published literature (**Chapter 3**). Each of the data chapters is formatted for publication and begins with a comprehensive introduction focussed on the specific topic to be addressed. Likewise, each data chapter contains a detailed discussion of the results achieved, including the relationships of the findings to existing knowledge of the subject,

limitations of interpretation based on the methodology employed, implications of the research in terms of the veterinarian's role in EoL management, and proposals for future study. Accordingly, the general discussion (**Chapter 8**), is relatively brief, primarily integrating the results of the different studies to draw overall conclusions about how owners of cats manage EoL decisions, how EoL management is taught to veterinarians, and the veterinarian's role in the process. A list of the relevant references is provided at the end of each chapter.

Domestic cats are the most popular companion animal in New Zealand (Anonymous, 2020). These cats are living longer and more of them are living with chronic conditions (O'Neill et al., 2013, 2015). This may mean that cats experience less than optimal quality of life for longer. Cats are considered property in many Western jurisdictions, including New Zealand (Anonymous, 1999). Therefore, it is up to the owner to make the decision about when, and how, to end the life of their cat. Owners may find such EoL decisions difficult, as they are influenced by many factors relating to their cat and to themselves. Owners often involve their veterinarian in the decision-making process; therefore, it is essential that veterinarians understand the role they play in EoL management of animals.

To ensure veterinarians are effectively supporting owners to make EoL decisions, there is also a need to know how veterinary students are taught relevant topics and skills. Research on the veterinarian's role in EoL management of animals has primarily been conducted in the Northern Hemisphere, and on dogs. The situation

may be different in New Zealand and for cat owners meaning that specific research in this context is required. Likewise, there is little research on veterinary training on topics relating to EoL management in Australasia. Accordingly, the following chapter reviews the literature relevant to EoL decision-making for owners of cats in New Zealand as well as to how EoL management is taught to veterinary students.

1.1. Thesis aims and specific research questions

In attempting to balance the needs of an animal with the owner's wishes, the veterinarian has a challenging role when involved in EoL management. This is particularly the case for older and chronically ill cats in New Zealand. Very little is known about New Zealand cats, owner considerations, and the role, or roles, of the veterinarian in managing the process of ending these animals' lives.

Given the important roles veterinarians can play in EoL management of animals, the overarching aim of research presented in this thesis is to explore how owners make the decision to end the life of their cat and the role of their veterinarian in the decision-making process. I also sought to understand how veterinarians are taught to manage the end of animals lives during their training. Specifically, the questions this thesis seeks to answer are:

- How do New Zealand cat owners make the decision to end the life of their cat?
- From the owner's perspective, what is the veterinarian's role in managing the end of their cat's life?

- How are veterinary students taught to manage aspects of the end of lives of the animals under their care and how well does this training appear to align with what New Zealand cat owners expect of their veterinarian?

Scope of research

Two studies were used to answer these questions. Study 1 (**Chapters 4, 5, 6**) focuses on how EoL management is taught to Australasian veterinary students, while study 2 (**Chapter 7**) is client focused. Study 1 focuses on when, how, and by whom, subjects relating to EoL management were taught to students in Australasian veterinary schools. The aim was to describe teaching in three areas: euthanasia techniques (**Chapter 4**); EoL decision-making (**Chapter 5**); and grief management (**Chapter 6**). All eight Australasian veterinary schools were included, and a representative at each school asked questions of staff who teach EoL management to veterinary students using a structured interview guide. Most animal species encountered in veterinary practice were included in this study to achieve a holistic understanding of how EoL management is taught to veterinary students, particularly as some topics were expected to be generic.

This was followed by a second study which retrospectively explored the perspectives of owners following the euthanasia of their companion cat (**Chapter 7**). Owners who had recently euthanased their cat were recruited for interview and their veterinarian was also separately interviewed about the same event. Questions sought to explore: the factors involved in EoL decision-making; how owners

assessed feline quality of life (QoL); what 'good' QoL for a cat meant to owners; and what the veterinarian's role was in the decision-making process. This thesis presents the results of the interviews with cat owners. The data from the parallel interviews with veterinarians was determined to be beyond the scope of this thesis. Separate publications are planned for: (1) results of veterinary interviews; and (2) a comparison of owner and veterinary decision-making relating to the same euthanasia event.

Together, these two studies provided rich information about the veterinarian's role in EoL management by examining how veterinary students were taught (**Chapters 4, 5, 6**) and how this role was enacted in clinical practice in the management of older and chronically ill cats (**Chapter 7**).

Value of this research

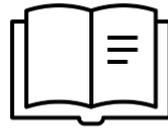
This research is unique in applying an exploratory inductive approach to investigating the roles of the veterinarian in EoL management using interviews with cat owners and with educators (Charles et al., 1997). The outcomes of this research will benefit the veterinary profession by providing insights into the perspectives of New Zealand cat owners when making EoL decisions. A better understanding of the veterinarian's role in the process, and what is taught to veterinary students, will inform the evolution of training, and therefore competency, of veterinarians. Anticipating owners' concerns and further understanding their needs will lead to improved outcomes and better assistance

with EoL decision-making. In doing so, the veterinary-client relationship will be strengthened. Ultimately, better veterinary-client relationships will improve the welfare of older and chronically ill cats.

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CHAPTER 2: Literature review



This chapter reviews the literature relevant to end-of-life (EoL) decision-making for owners of cats in New Zealand and the potential roles of veterinarians in that process, as well as to how EoL management is taught to veterinary students. By using a narrative review style, I aim to situate various subtopics within the broader context of this field of research including: quality of life and its assessment, human-animal relationships, models of veterinary-client relationships, veterinary communication skills, legal and professional obligations of veterinarians, veterinary competency, technical euthanasia skills, decision-making, and grief management. I begin by providing the rationale for focussing my research on EoL decision-making for older and chronically ill cats in New Zealand.

2.1. Older and chronically ill cats in New Zealand

My research focuses on cats for several reasons. Domestic cats, as companions or pets, have received relatively little attention in the animal welfare or veterinary literature thus far, and yet are the most popular companion animal (CA) in New Zealand (Anonymous, 2020c). The relative paucity of information on cats in the literature could be due to the limited knowledge of their behaviour and needs, or to a misguided belief that they do not have as many needs as dogs (Robertson, 2008; Rodan, 2010; Smith et al., 1996). In terms of EoL decision-making, the

overwhelming focus is on assessing quality of life (QoL) and is on dogs (e.g., Lavan, 2013; Mullan & Main, 2007; Yeates et al., 2011), with few references to feline studies (e.g., Freeman et al., 2016). In addition, most of these studies pertain to the situation in North America (e.g., Freeman et al., 2016; Lavan, 2013), or the Northern Hemisphere (e.g., Mullan & Main, 2007).

However, 41 % of New Zealanders share their house with a cat (Anonymous, 2020c) and cats, on average, live longer than dogs (O'Neill et al., 2013, 2015). Furthermore, New Zealanders are likely to view their CAs in a different way to their Northern Hemisphere counterparts (Kellert, 1997). The popularity of companion cats in New Zealand is probably the result of human lifestyle changes that restrict the keeping of dogs (e.g., renting properties). Therefore, there is a growing need to learn more about the life-long welfare of CA cats in New Zealand. This need includes their welfare at the end of their lives.

As veterinary care has improved, many companion animals are living longer (Bonnett & Egenvall, 2010; Egenvall et al., 2009). For example, the American Veterinary Medical Association estimated that in 2011 more than 20% of cats were over 11 years of age. The Companion Animals New Zealand (2020c) report does not mention feline ages, but it is reasonable to assume a similar proportion of New Zealand-owned cats are also over this age. This, coupled with the increasing popularity of cats as companions, has led to an increase in the number of older cats

requiring care in New Zealand (Anonymous, 2020c; Gardiner, 2014; Ormerod, 2008).

To complicate matters, the term ‘old’, when used to describe cats, has diverse definitions. A cat over the age of 8 years may be classified as mature (Bellows et al., 2016; Vogt et al., 2010), senior (Fortney, 2012), or geriatric (Carter et al., 2014), with variation in this age threshold (e.g., 9 years: Finch et al., 2013; 10 years: Ghys et al., 2015; 15 years: Vogt et al., 2010). Others use ‘75-80% of anticipated lifespan’ as the point when a cat, or dog, becomes ‘geriatric’ (Baetge & Matthews, 2012; Dodman et al., 1984; Hughes, 2008). This percentage definition makes including the variable life expectancies of different dog breeds more practical (Hughes, 2008), but necessitates an accurate estimate of lifespan.

It is important to understand what an old CA is to get a sense of when EoL decisions might become relevant to owners. For cats, some authors suggest some “*well-cared for*” cats can live into their early twenties (Bellows et al., 2016). A nationwide study using data obtained from veterinary practices in the United Kingdom (UK) found a median feline longevity of 14.0 years (range 0.0 - 26.7), with variation among breeds (**Table 2.1**). Mortality was bi-modally distributed and peaked at years 1 and 16. This suggests the presence of two subpopulations: those that suffered an early death because of trauma (typically road traffic accidents), and cats that survived to an older age, when renal disorders, non-specific illness, and neoplasia were the most common causes of mortality (O'Neill et al., 2015). It is worth noting that more

than 85% of deaths in this UK study involved euthanasia. This, in addition to the bi-modally distributed population, makes interpretation of these data difficult in terms of estimating actual feline lifespan, and for classification as an 'old cat'.

Breed differences in feline life expectancy will also impact upon what is considered 'old' or 'geriatric' for different cat breeds. In New Zealand, 80% of owned cats are mixed/non pure bred (Anonymous, 2020c). Given the longer lifespan of crossbred cats (**Table 2.1**), this could mean that the median lifespan of New Zealand cats is higher than in other countries with more purebred cat ownership. Therefore, age at 'geriatric' might likewise be older for New Zealand cats. For these reasons, my research will allow participants to judge what a cat's age may mean for its life expectancy and what they perceive as 'old'.

Chronically ill cats have also been included in my research because EoL decisions for these animals may be similarly complicated. Cats are susceptible to a range of chronic diseases, for example, renal disorders and neoplasia (O'Neill et al., 2015; Rollin, 2007). The extended duration of these kinds of illnesses and the, often, slow decline contributes to the difficulty in making QoL assessments and EoL decisions. That is, the point at which the animal's life is no longer 'worth living' is not always clear (Anonymous, 2009; Yeates, 2011). These old and chronically ill cats in New Zealand are at risk of animal welfare compromise if they are kept alive beyond a reasonable QoL.

Table 2.1 Longevity and 'geriatric' ages for various cat breeds in the United Kingdom

Breed	Median age (range) at death in years*	Age calculated as 'geriatric' in years†
Birman	16.1 (1.0-20.7)	12.1-12.9
Burmese	14.3 (0.7-20.7)	10.7-11.4
Siamese	14.2 (0.9-21.1)	10.7-11.4
Persian	14.1 (0.0-21.2)	10.6-11.3
Crossbred	14.0 (0.0-26.7)	10.5-11.2
British shorthair	11.8 (0.0-21.0)	8.9-9.4
Maine Coon	11.0 (0.2-19.0)	8.3-8.8
Ragdoll	10.1 (0.1-17.9)	7.6-8.1
Abyssinian	10.0 (1.0-20.8)	7.5-8.0
Bengal	7.3 (0.6-13.7)	5.5-5.8
Overall	14 (0.0-26.7)	10.5-11.2

*Based on data from O'Neill et al. (2015)

†Calculated according to the definition of 75 - 80% of anticipated lifespan (Baetge & Matthews, 2012; Dodman et al., 1984; Hughes, 2008)

2.2. Making the decision to euthanase a companion cat

This research topic represents an under-appreciated area for animal welfare concern. In New Zealand, cats are considered the property of their owners (Anonymous, 1999). This has implications for EoL management, because owners are legally entitled to decide if, and when, to end the life of their animal and often do so in consultation with their veterinarian.

The way in which EoL is managed and euthanasia decisions made are important to three groups: the animal, the owner/client, and the veterinarian. For cats, negative experiences due to age-related changes (e.g., pain caused by arthritis), or chronic

illness, reduce the quality of these animals' lives (Robertson, 2008). As cats are unable to verbally communicate their affective (mental) experiences (McMillan, 2005; McMillan, 2007; Taylor & Mills, 2007), the EoL decision falls to their owner, often in consultation with a veterinarian. However, there appears to be a growing ethos, particularly among urban CA owners, that any life is preferable to a humane death. In support, many CA owners place a high value on keeping animals alive (Anonymous, 2009; Sandøe & Christiansen, 2007; Wensley, 2008), and there is potential for this attitude to have significant detrimental impacts on feline welfare. This is particularly the case for older cats and those with chronic disease, whose slow deterioration may result in them being kept alive beyond what is optimal for their QoL. Therefore, separating the owner's perceptions of their animal's QoL from their personal situation is challenging and tends to result in an overlap between animal and owner considerations for EoL decisions.

With this overlap in mind, seven factors that influence euthanasia decision-making have been articulated in the literature. The first three factors relate to the animal itself, while the latter four are owner-related factors. Of the three animal-related factors, 'overall QoL', or an animal that is 'suffering', is the most suggested reason for euthanasia in several studies (e.g., Ireland et al., 2011; McGowan et al., 2012; Slater et al., 1996). Secondly, pain, either caused by an incurable disease, that which is chronic and recurrent, or acute severe pain, is another factor (e.g., Ireland et al., 2011; McGowan et al., 2012). Third, a poor or 'hopeless' prognosis is a frequent finding (e.g., Ireland et al., 2011; McGowan et al., 2012; Slater et al., 1996).

In terms of owner-related factors, the owner's relationship with their animal is often cited (e.g., McGowan et al., 2012), as is the fifth factor: veterinary advice (e.g., Ireland et al., 2011; McGowan et al., 2012). Sixth, anticipated burden or cost to the owner can also be a cause for euthanasia (e.g., Ireland et al., 2011; McGowan et al., 2012; Slater et al., 1996), as can the seventh factor, their previous experience with the disease or with the death of a pet and their stance towards euthanasia (e.g., Dickinson et al., 2014; Slater et al., 1996). Each of these factors is discussed in more detail below.

Factors influencing EoL management that relate to the animal

Three factors that influence how the end of their life is managed, and when the euthanasia decision is made, relate primarily to the animal itself: overall quality of life, pain, and prognosis.

Quality of life and its assessment

As we cannot directly measure the mental experiences of animals, EoL management typically relies on clinical, and other, indicators of QoL or animal welfare status (Fraser, 2008; McMillan, 2000; Mellor & Stafford, 2009). In particular, the mental experience of pain and its palliation in animals near the end of their lives is one of the cornerstones of veterinary hospice care (Bishop et al., 2016; Epstein et al., 2005; Goldberg, 2016).

Despite its meaning being intuitively understood (McMillan, 2000; McMillan, 2005), there is currently no universally accepted definition of, or assessment methodology for, QoL in animals (McMillan, 2000; Taylor & Mills, 2007). This is due to the continual evolution of knowledge about the mental experiences of animals, changes in how society expects animals to be treated, and developments in the scientific assessment of the outcomes of such treatment (Fraser, 2008; Rollin, 2007). QoL is conceptualised by some as the animal's welfare *state*, or mental experiences, assessed over an extended period (Taylor & Mills, 2007; Yeates, 2012). Several authors consider QoL and animal welfare to be synonymous or see QoL as simply representing a part of animal welfare (e.g., Broom, 2007; Fraser & Duncan, 1998; Mellor & Stafford, 2009). However, because QoL tends to be more intuitively understood by lay animal carers and CA owners, I have chosen to use this term, rather than animal welfare status, throughout this thesis.

The term 'health-related quality of life (HRQoL)' is also gaining traction and appears to be used as a measure of the success of medical (e.g., Iliopoulou et al., 2013; Lynch et al., 2010) or surgical (e.g., Milner, 2006; Snelling & Edwards, 2003) treatments for individual animals (Freeman et al., 2005). HRQoL assessment may be used to discriminate between individuals or to assess the extent of changes in a particular animal's status over time, for example, when evaluating a treatment protocol, monitoring disease progression, or considering prognosis (Reid et al., 2013).

However, HRQoL is poorly defined, and there tends to be an overlap in meaning with the broader concept of QoL (Broom, 2007; Iliopoulou et al., 2013; McMillan, 2000). For example, in veterinary oncology, HRQoL has been described as “*the effect of cancer and its treatment on body function and well-being*” (Lynch et al., 2010, p. 172). To assess the effect of disease on an animal’s overall QoL, health needs to be recognised as one component of QoL. However, if other aspects of an animal’s life are not included in QoL assessments, there is a risk that sources of negative experiences not directly related to their disease or treatment will be ignored (e.g., boredom), and potential sources of pleasure not considered (e.g., affectionate sociability resulting from affiliative interactions) (Hewson et al., 2007; Mellor et al., 2020).

There is currently no gold standard protocol for QoL assessment in small animals (Hewson et al., 2007; McMillan, 2000; Taylor & Mills, 2007). Formal tools may be used to assess QoL, and there are several scales designed by veterinarians, using their own experiences of EoL decision-making, to indicate when euthanasia may be appropriate (e.g., Hilst, 2013; Villalobos, 2004). However, these scales have not been validated, nor is there evidence of science-based reasoning for inclusion of the individual items contributing to the scales (Belshaw et al., 2015). There is also a need for an improved understanding of the different perspectives of the potential users of these tools, namely, the owner and their veterinarian (Weary et al., 2016).

Pain and its assessment

Pain is another factor identified as influencing euthanasia decisions for CAs. Pain features in most QoL assessment protocols, and particularly in those designed for EoL decisions (e.g., Hilst, 2013; Villalobos & Kaplan, 2007). For example, one such protocol assigns 10 of the available 80 QoL assessment points to “*low Ouch or Pain*” when assessing for “*a healthy and happy pet*” (Hilst, 2013).

Current definitions of pain emphasise its subjective nature, distinguishing the mental/emotional component of pain from its simple sensory function, and clarifying its adaptive role and impact on QoL. For example:

“An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage.” (Raja et al., 2020, p. 1977)

These kinds of definitions emphasise the importance of painful experiences for the person, or animal, experiencing them. Feline pain and its management have been recently reviewed (e.g., Merola & Mills, 2016; Monteiro & Steagall, 2019; Steagall & Monteiro, 2019), and guidelines developed (e.g., Epstein et al., 2015; Mathews et al., 2014), by experts in veterinary anaesthesia and analgesia. However, the absence of pain does not imply that an animal is experiencing good QoL. Pain is only one kind of unpleasant mental experience that an animal may have and is only one factor among many that can impact upon the animal’s QoL, and thus the decision to end their life. Pain is also an emotional (mental) state; therefore, attention

should be given to other aspects of an animal's QoL (i.e., welfare) that have the potential to impact on its mental experiences, and thus its overall welfare (Taylor & Robertson, 2004). For example, physical discomfort and limits on threat avoidance may add to the negative experiences, and potentially worsen the pain experience, of a hospitalised cat (Taylor & Robertson, 2004). For this reason, and because feline pain and its assessment were not the primary focus of this research, a brief review of feline pain management, recognition, and assessment follows.

A pain response is a multifactorial event with sensory components (i.e., nociception; the neural processing of noxious stimuli) and perceptive components (i.e., pain experience; a sensory and emotional experience with an unpleasant quality) (Epstein et al., 2015; Reid et al., 2013). The emotional experience of pain, which is of most direct relevance to welfare or QoL, arises only due to activity at cognitive levels within the central nervous system (Johnson, 2018). Because animals are unable to directly communicate their mental experiences (e.g., the emotional component of pain that is unpleasant), pain is assessed by proxy using physiological and behavioural indicators (Beausoleil & Mellor, 2017; Epstein et al., 2015; Murrell & Johnson, 2006).

This is still challenging, because such indicators may reflect nociception, rather than the subjective emotional component of pain experienced by the animal, and may be influenced by various factors other than pain. For instance, no single physiological measurement can be reliably used as a sensitive indicator of pain

outside of a research setting (Murrell & Johnson, 2006; Taylor & Robertson, 2004). In a clinical setting, physiological indicators such as blood pressure, heart rate, and respiratory rate can be affected by factors such as fear and anxiety (Monteiro & Steagall, 2019; Murrell & Johnson, 2006; Paul-Murphy et al., 2004; Taylor & Robertson, 2004).

In a veterinary clinical sense, behaviour-based indicators of pain in cats include posture, activity level, demeanour, interaction with people, attention to the wound, vocalisation, facial expression, response to treatment, and response to touch, pressure, or palpation (Epstein et al., 2015; Merola & Mills, 2016; Waran et al., 2007). Algometers are useful for mechanical threshold testing of pain responses and can indicate hyperalgesia – an extreme response to noxious stimulation. In clinical settings, the use of algometers is often replaced with physical palpation of animals to gauge their responses to touch (Epstein et al., 2015; Monteiro & Steagall, 2019; Taylor & Robertson, 2004). Less specific behaviours such as changes in appetite are not sensitive clinical indicators of pain; some cats experiencing pain will eat and there are many other potential causes for inappetence or anorexia other than pain (Monteiro & Steagall, 2019). These challenges mean that there is no gold standard technique for assessing pain in cats (Epstein et al., 2015; Murrell & Johnson, 2006).

In an attempt to address some of these challenges, composite scoring methods, or ‘pain scales’, have been developed that use a combination of techniques to evaluate

pain experience (e.g., Brondani et al., 2013; Finka et al., 2019; Reid et al., 2017). For example, the refined Glasgow Composite Measures Pain Scale uses multiple animal-based indicators and has been validated for clinical use on cats with surgical, traumatic, and medical acute pain conditions (Reid et al., 2017). The 'recommended analgesic intervention level' for the Glasgow scoring system is 5/20 (Reid et al., 2017). However, the precautionary principle suggests that no cat should be denied analgesic therapy based only on the results of a pain score (i.e., if in doubt, analgesia should be provided), so these scores should be used with caution when it comes to therapeutic interventions (Monteiro & Steagall, 2019; Sneddon et al., 2014).

Despite the existence of tools for pain scoring animals, research suggests there may still be bias in analgesic use amongst veterinarians (Dohoo & Dohoo, 1996; Williams et al., 2005). Female veterinarians and recent graduates are reported to use analgesics for companion animals more than male and earlier graduating veterinarians. The authors suggest this may be linked to gender differences in discerning pain in animals, as well as differences in empathy towards animals (Dohoo & Dohoo, 1996; Williams et al., 2005). However, Farnworth et al., (2014) did not find the same difference in analgesic use between genders, which suggests that this disparity may be reducing over time.

Owners also have an important role to play in improving the management of chronic feline pain in their home environment. They know their cat well and are

more likely than veterinarians to detect subtle changes in their cat's behaviour (Epstein et al., 2015; Monteiro & Steagall, 2019; Reid et al., 2013). However, owners may not be able to recognise these behaviours as indicators of pain and, over time, chronic pain behaviours may be disregarded by owners as 'normal' or an inevitable part of the ageing process (Taylor & Robertson, 2004). Poorly recognised and managed feline pain can result in early euthanasia (Epstein et al., 2015; Taylor & Robertson, 2004). Therefore, educating owners about pain behaviours is recommended (Epstein et al., 2015; Monteiro & Steagall, 2019). Involving owners in pain management has the added advantage of increasing veterinarian-client interaction and shared decision-making, as well as improving the human-animal relationship (Epstein et al., 2015; Monteiro & Steagall, 2019).

Prognosis and life-expectancy

Many people feel the need to find an element of certainty in the uncertainty inherent in some EoL decisions for animals (Christiansen et al., 2013; Stoewen et al., 2019; Stoewen et al., 2014). To achieve this, many owners look to their veterinarian to understand what is happening with their animal. Veterinarians in turn make use of the prognostic and life-expectancy data that are emphasised in veterinary literature about chronic conditions and disease trajectories (Rollin, 2007). The result is that owners might then focus on prognosis and life-expectancy when making euthanasia decisions.

To summarise, in terms of factors relating to the animal itself, the focus of EoL management and euthanasia decision-making for CAs has been on QoL and protocols designed to assess QoL, with a particular emphasis on HRQoL, including pain and prognosis. Assessments of these animal-related factors involve subjective judgements by owners and are thus influenced by factors relating to owners themselves.

Factors influencing EoL management that relate to the owner

Due to the complex nature of decision-making, and to the reliance on humans to make these decisions for the animals under their care, there is a need to explore the human and 'other' factors that also influence EoL management (Dickinson et al., 2014; O'Neill et al., 2015; Sanders, 1995). A better understanding of these factors may improve the decisions made, as well as reduce the emotional burden on owners and veterinarians involved in the decision-making process (Morris, 2012; O'Neill et al., 2015). In general terms, owner factors that may influence decisions about EoL management include the owner's relationship with their animal, the anticipated burden or cost to the owner, the owner's ethical stance towards euthanasia, and veterinary advice.

Relationship with animal

The decision to end an animal's life may depend on the category of animal concerned and its use or perceived value to the persons involved (Brockman et al., 2008). For example, livestock are often considered differently to CAs. Even within

species, a dairy cow in a commercial herd that is no longer producing adequately will be considered differently than if it is the farmer's 'pet' with the associated attachments. In the same way, an indoor dog owned by a family may have a different value to one that is kept outdoors and used solely for farm work. Therefore, animal value, category, and use are all important factors in EoL decision-making (Brockman et al., 2008; Rollin, 2011).

Linked to value, the relationship an owner has to a particular animal within a class will likely impact upon the decision to end its life (Dawson & Campbell, 2009; Williams et al., 2017). For example, some people may consider some CAs to be members of the family and be willing to go to extremes to maintain that relationship even if their QoL is poor (Brockman et al., 2008; Dawson & Campbell, 2009; Heuberger & Pierce, 2017; Rollin, 2011; Williams et al., 2017). Others may have a contractual view of animals and believe that the CAs under their care are used for the benefit of humans. Such owners may give less consideration to their animal's overall wellbeing or death (Brockman et al., 2008; Rollin, 2002; Rollin, 2011).

The term 'human-animal bond' is used frequently in North American literature to refer to a very strong attachment and commitment of a person to their (usually) companion animal (e.g., Brackenridge et al., 2012; Knesl et al., 2016; Ormerod, 2008; Rowan, 2008; Schneider et al., 2010; Shaw, 2006; Serpell, 2019). However, this term has been explicitly avoided in this thesis for several reasons. Firstly, it is

inherently value-laden and risks ‘othering’ animal owners who do not share this same overtly close relationship with their animal(s) (e.g., Brackenridge et al., 2012; Schneider et al., 2010). Secondly, the human-animal bond, ordered as such, implies a unidirectional relationship between owner and animal. That is, the owner is bonded *to the* animal. This term does not support a dyadic relationship between owner and animal, and based on applied animal behavioural science, nor should it because attachment and relationships are structured differently for animals (Ines et al., 2021; Payne et al., 2015; Rehn et al., 2014; Rehn & Keeling, 2016).

This unidirectional relationship carries risks for an animal’s welfare. For example, if the owner is unable to separate their needs in the bonded relationship from the animal’s QoL, they may delay severance of this relationship (i.e., euthanasia) (Grimm et al., 2018; Quain et al., 2021; Rollin & Rollin, 2001; Serpell, 2019; Wensley, 2008). And finally, as Rollin & Rollin (2001) so eloquently put it, companion animals are ‘used’ by humans (i.e., for companionship) and the promulgation of the term ‘human-animal bond’ can be detrimental to these animals, and veterinarians, when used indiscriminately:

“...a companion animal is kept to give, and to receive, love, probably the ultimate human requirement.... we have a contractual relationship with all domestic animals, but most clearly so with those who are totally dependent on us, and for whom we have left no room to subsist, let alone thrive, on their own. If the human animal bond is to be more than a slogan for the very lucrative pet industry, more than a marketing ploy for veterinary services, we

must face up to the fact that animals are doing fine holding up their end of the bargain; it is we who should be ashamed.” (Rollin & Rollin, 2001, pg. 7)

To capture the full extent of this potential dyadic relationship, the term ‘human-animal relationship’ has been preferentially used as much as possible throughout this thesis. The strength and dynamics of the human-animal relationship are evident when the grief of owners over the loss of an animal is examined (Payne et al., 2015). Grief may be more significant if the animal is long-lived, has been an integral part of family life, or represents a human relationship – past or present. Anticipatory grief occurs when owners are not adequately prepared to sever their connection to their animal. This form of grief may result in CA owners keeping their animal alive beyond a reasonable QoL (Spitznagel et al., 2020). Consideration of how grief is managed leading up to and after euthanasia is an important aspect of EoL management but is not the main focus of this research, except in terms of the veterinarian’s role. Many studies have already concentrated on the grief experience for people who have recently euthanased their CA, that is, owner grief (veterinary grief is discussed in a later section) (e.g., Fernandez-Mehler et al., 2013; Slater et al., 1996).

In Western social culture, grief relating to the loss of an animal is not always legitimised by peers (Adams et al., 1999; Chur-Hansen, 2010; Dickinson et al., 2010; Marton et al., 2019; Redmalm, 2015; Testoni et al., 2019). Owners who struggle to deal with grief at the loss of their animal are at risk of ‘complicated grief

and depressive episodes, and anticipatory grief may cause them to delay euthanasia to avoid negative emotions (Adams et al., 1999; Testoni et al., 2017). There are obvious implications for animal welfare if animals experiencing poor QoL are not euthanased in a timely manner (Knesl et al., 2017; Rollin, 2011). Thus, veterinarians, as members of an animal care profession and animal welfare advocates, have an important role to play in supporting and validating their clients' grief (Adams et al., 1999; Marton et al., 2019; Peck, 2005; Testoni et al., 2019).

Burden or cost to owner

Financial and time commitments are important considerations for many owners who are faced with managing the end of their animals' lives (Brockman et al., 2008; Coe et al., 2007; Yeates, 2012). These owners are often forced to decide whether they will engage with therapy, or palliation, for their animal, along with the associated hardships for them (Brockman et al., 2008). Owners without pet insurance were seven times more likely to opt for euthanasia over surgery for their dog with gastric dilatation-volvulus (Boller et al., 2020). This decision is often based on them weighing up the owner- and animal-related factors alongside their resource capabilities (e.g., time, money, skill). If, on balance, the burden of keeping an animal alive is too great, a decision to euthanase may result.

Stance towards animal euthanasia

The owner's relationship with their animal, their previous experience with death, and other personal factors (e.g., religion, culture) may impact on their overall

stance towards animal euthanasia (Dickinson et al., 2014; Slater et al., 1996). This may result in different owners in similar circumstances coming to different conclusions about how to manage the end of their animals' lives.

All these owner-related personal or psychosocial factors may impact on EoL management of animals, but more information is needed to understand how (Spitznagel et al., 2020; Stoewen et al., 2019). Inevitably there will be some overlap between animal- and owner-related factors. Cats cannot verbally communicate, so it is up to their owner, with or without their veterinarian, to interpret behavioural and other indicators, in terms of QoL, to make EoL decisions. While some studies have explored aspects of EoL decision-making for CAs, no one has focused on the entire EoL management process. There has not been a holistic examination of the owner's perspective on, and management of, EoL decision-making for cats. Retrospective interviews with owners following a euthanasia decision will provide valuable information about how owners and their veterinarians communicated about, and eventually settled upon, an EoL decision for the cat concerned. These interviews will also explore the methods used for QoL assessment as part of the EoL decision and how grief was managed. Owner understanding and assessment of QoL is also likely to have an impact on how EoL decisions are made. This makes the process of segregating EoL related factors into discrete survey questions challenging. A reflexive social science approach to understanding this complex situation is likely to provide a richer, more holistic, understanding of euthanasia decision-making (Charles et al., 1997).

2.3. The veterinarian's role in managing the end of animals' lives

Veterinary advice was cited in the previous section as an important factor that influences EoL decision-making for animals. The advice veterinarians give owners, and their role in EoL management of animals, is influenced by several factors, namely: their relationship with their client, legal and professional obligations, competency, communication skills, and how they are taught. Many of these factors sit under the umbrella of veterinary professionalism.

Veterinary professionalism

Professionalism is distinct from professional skills. Professional skills include communication, management, business, teamwork, and leadership, whereas professionalism has an emotional component and refers to appropriate behaviours and attitudes (Mossop & Cobb, 2013). Both professionalism and professional skills impact upon the veterinary-client relationship (Mossop & Cobb, 2013).

Mossop (2012) asked veterinarians, veterinary nurses, clients, and representatives from the veterinary professional association in the United Kingdom to describe what they understood by the term 'veterinary professionalism'. The attributes they listed included caring and empathy, honesty and trust, altruism, personal efficiency, communication skills, problem-solving, decision-making, self-confidence, self-regulation, knowing one's limits, and maintaining technical competency (Mossop 2012). These attributes balance the interests of the client, the

patient, the practice, and the wider veterinary profession and represents the core of professionalism (Mossop 2012).

Tinga et al. (2001) surveyed veterinary students and new graduates about their perceptions of veterinary technical and professional skills. When describing the characteristics of a successful veterinarian, new graduates ranked interpersonal skills and veterinary-client communication skills higher than knowledge of veterinary sciences or accurate diagnostic skills (Tinga et al. 2001). Likewise, members of the Quebec Veterinary Association identified professional activities such as important for career success (Doucet & Vrins 2009).

Skills in assessing animal welfare or quality of life were not explicitly evaluated by Tinga et al. (2001). Likewise, important attributes relating to veterinary-animal communication of mental experience (i.e., animal welfare assessment) were manifestations of disease in individual animals or populations, mechanisms of disease, mechanisms of pathogenicity, normal behaviour, physiology, nutrition, disease aetiology, and pathophysiology (Doucet & Vrins 2009). Neither study explicitly focused on the mental experiences of animals.

These studies support the inclusion of professionalism training in veterinary curricula. In support, a systematic review of the veterinary literature to determine the importance of professional competencies to graduate success revealed that professional behaviour and communication skills were the two competencies

recognised as most important (Cake et al. 2016). Communication is a professional skill very closely related to professionalism because effective communication skills are necessary to demonstrate a professional attitude (Mossop & Cobb, 2013).

Health and welfare advocacy were less important for veterinary graduates. However, the importance of being able to assess animal welfare was not explicitly evaluated and 'patient care' was confounded with 'effective communication with clients' (Cake et al. 2016). Interestingly, communication skills were perceived to be important by veterinarians and employers but less so by clients, perhaps implying that clients have a different communication focus than veterinarians (Cake et al. 2016).

The role of veterinary-client communication in EoL management of animals

When a veterinarian is involved, the way in which the end of animal life is managed, and euthanasia decisions made, is important to three groups: the animal/patient, the owner/client, and the veterinarian. Therefore, these same three parties should be considered in veterinary communication strategies during EoL management of animals (**Figure 2.1**).

This thesis focuses on communication between the veterinarian and the animal as well as between the owner and animal (**Figure 2.1**; blue and green arrows). That is, my focus is on how veterinarians and owners assess QoL (i.e., animal welfare) at the end of animal life (**Figure 2.1**; blue and green arrows), factors that might

impact on these assessments (**Figure 2.1**; red boxes and arrows), and how this process is taught and enacted in practice. Animals ‘communicate’ their mental experiences (i.e., how they are feeling or their quality of life) via welfare indicators (Beausoleil & Mellor, 2017). These indicators must be correctly recognised and interpreted by humans for effective veterinarian-animal and owner-animal communication to occur (**Figure 2.1**; blue and green arrows).

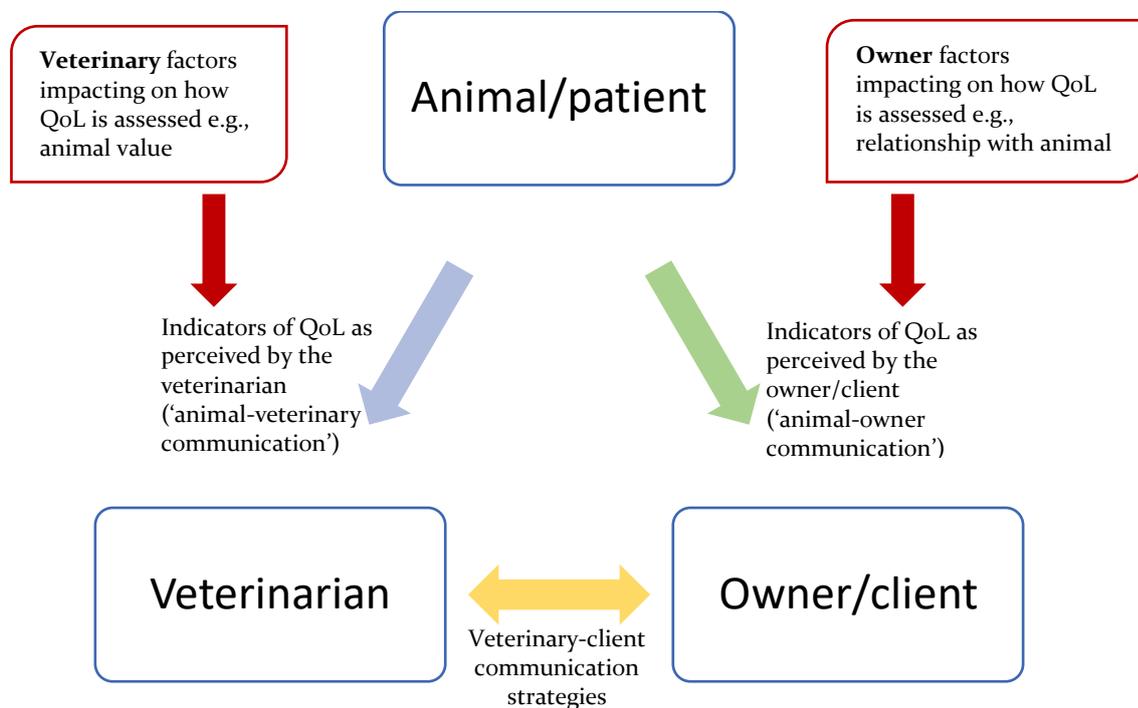


Figure 2.1 The tripartite communication relationship between animal, veterinarian, and owner; QoL = quality of life.

The relationship between veterinarian and owner/client also factors into EoL management of animals (Persson et al., 2020; Rollin, 2007; Rollin, 2011), and can be enhanced by effective communication strategies (Adams & Frankel, 2007; Knesl, 2016; Main, 2013). Therefore, in this section, I will review the role of

veterinary-client communication in EoL management of companion animals (**Figure 2.1**; yellow arrow).

Effective communication for human medical professionals has been well described (e.g., Baile et al., 2000; Dickinson, 2006; Kurtz & Silverman, 1996; Rosenbaum et al., 2004; Tulskey, 2005; Weissman, 2004). Information and research about veterinary-specific communication skills is increasing (e.g., Adams & Kurtz, 2006; Adams & Frankel, 2007; Borden et al., 2019; Brown et al., 2021; Coe et al., 2008; Cornell & Kopcha, 2007; Cron et al., 2000; Da Costa, 2021; Dysart et al., 2011; Gordon et al., 2021; Janke et al., 2021a,b; Matte et al., 2020; Radford et al., 2006; Shaw, 2006; Shaw et al., 2008; Stoewen et al., 2014a,b; Stoewen et al., 2019) and conferences dedicated to veterinary communication are becoming commonplace (e.g., Anonymous, 2021b). There is now literature dedicated to aspects of veterinary EoL management communication such as delivering bad news (e.g., Radford et al., 2006; Shaw & Lagoni, 2007), clinical decision-making (e.g., Cornell & Kopcha, 2007; Janke et al., 2021a,b; Spitznagel et al., 2020), euthanasia discussions (e.g., Borden et al., 2019; Matte et al., 2020; Radford et al., 2006; Shaw & Lagoni, 2007), and grief management (e.g., Adams et al., 1999; Bussolari et al., 2018; Marton et al., 2019; Matte et al., 2020; Peck, 2005; Radford et al., 2006; Testoni et al., 2019). Therefore, despite historic arguments to the contrary (Shaw, 2006; Shaw et al., 2004), there now exists sufficient veterinary-specific communication literature to focus this brief review of veterinary communication skills (Adams, 2013).

This section focuses on the veterinary-client communication for several reasons. Firstly, unlike much of human medicine, excluding paediatric care (Feudtner, 2007; Truog et al., 2006), the patient and client are not the same. Therefore, there are practical ‘communication’ constraints in interpreting ‘what animals want’ (i.e., their welfare) (Fraser et al., 1997; Taylor & Mills, 2007; Yeates, 2012). Veterinary clients are proxy decision-makers for their animals (‘the patient’), with the result that veterinarians may be torn between owner and animal needs, or welfare, when communicating and interacting with clients (Blackwell, 2001; Grimm et al., 2018; Quain et al., 2021).

Secondly, euthanasia is an option for veterinary EoL management, whereas euthanasia, or ‘physician-assisted suicide’, is limited to a very small number of jurisdictions for human EoL management (e.g., The Netherlands; Borgsteede et al., 2007; Georges et al., 2007). Human palliative care literature could be a useful source of information to guide veterinary communication strategies during EoL discussions (e.g., Hamdoune & Gantare, 2021). However, having euthanasia as a viable ‘treatment’ option makes EoL discussions particularly challenging for veterinarians, as they are often faced with shifting their focus, and conversations, from heroic efforts to save an animal’s life to potentially ending it (Quain et al., 2021; Taylor, 2021). When used as a means for delaying euthanasia, palliation and hospice care increase the risk of overtreatment or dysthanasia, that is, ‘difficult death’, and have serious welfare implications for the animal involved (Quain et al.,

2021). A measured discussion about the ethics of animal hospice and palliative care is beyond the scope of this thesis. As such, literature focused on palliation (veterinary or human) will only be briefly covered in this decision-making section.

Third, unlike human medicine in many countries, veterinary medicine is not state-funded. Owners are full fee-paying clients (and/or pay for pet insurance), therefore, cost-benefit discussions are differently weighted for animals than for humans, and euthanasia is an alternative to costly advanced veterinary care (Brockman et al., 2008; Brown et al., 2021; Coe et al., 2008; Quain et al., 2021). Finally, the relationship between owners and their animals dictates their treatment and how veterinarians communicate with different clients (Persson et al., 2020; Rollin, 2007; Rollin, 2011). Altogether, these factors are likely to influence how veterinarians communicate EoL management with their animal-owning clients when compared with their human medical counterparts (Adams, 2013).

Models of veterinary-client relationships and communication styles

The veterinarian's relationship with their client can influence the role they play in EoL management for animals. In their clinical role, veterinarians may be tasked with caring for, treating, and subsequently euthanasing the same animal (Persson et al., 2020; Rollin, 2007; Rollin, 2011). Amid these potentially conflicting roles, veterinarians may need to advise owners on EoL decisions while also attending to the owner's concerns and grief (Persson et al., 2020). Therefore, the owner-

veterinary relationship is an important consideration in EoL management of animals.

Veterinarians can take various roles when they interact with their clients. Examples of these roles include: the paternalistic veterinarian (Emanuel & Emanuel, 1992), the information-provider, the garage mechanic, or paediatrician (Rollin, 2006), the veterinarian who influences their client (Christiansen et al., 2016; Yeates & Main, 2010), or who shares in the decision-making process (Charles et al., 1997; Christiansen et al., 2016; Rollin, 2002).

The paternal model of healthcare is based on the traditional role of the veterinarian as an all-knowing father figure. A paternalistic veterinarian would have used their Aesculapian authority to dictate their client's decisions (Charles et al., 1997; Emanuel & Emanuel, 1992; Rollin, 2002; Rollin, 2007). This is the unique authority attributed to medical professionals, including veterinarians, and is a vestige from when medicine and divinity were inseparable. This authority derives from traits such as specialised knowledge and a moral imperative to heal and do good by their patients, as well as the perception that medicine may still be related to magic by the scientifically naïve (Persson et al., 2020; Rollin, 2002).

Rollin (2002) argues that Aesculapian authority is the most powerful type of authority and gives the example of kings and politicians being dictated to by their personal physicians. This paternal model has since gone out of favour in both

human and veterinary medicine and has been replaced with concepts such as informed choice and client autonomy (Back et al., 2009; Charles et al., 1997; Emanuel & Emanuel, 1992; Rollin, 2002). However, Rollin (2002) argues that paternalism, despite being vilified, has benefits when used for EoL management of animals. Paternalist veterinary EoL decision-making and training would allow the veterinarian to answer a client who asks, “*What would you do?*” in a directive manner, rather than avoiding the question (Rollin 2002). This paternalistic style of communication may also be useful during the initial phases of emergency consultations when an urgent decision needs to be made (Bateman, 2007).

The information-provider model of healthcare is at the opposite end of the decision-making spectrum to the paternal model. In this model, the veterinarian gives their client the information necessary for an informed choice but leaves the decision to the client and respects their autonomy (Heuberger & Pierce, 2017; Morgan & McDonald, 2007; Slater et al., 1996). Client autonomy is often touted in the veterinary literature as being Best Practice for owner-veterinarian interactions during EoL decision-making (Morgan & McDonald, 2007; Morton, 2010). The term regularly appears in North American-centric publications and is often defined by decisions based on informed consent (e.g., Morgan & McDonald, 2007). However, as Rollin (2002) argues, this veterinary-client communication style risks an owner keeping an animal alive if they are overly focused on their own interests (i.e., permanent severance of a relationship). Veterinarians have a duty to

end suffering when an animal's QoL is not worth living and some argue that they should exert their Aesculapian authority to achieve this (Rollin 2002).

The 'information provider' communication model can be refined by using an interactive information-giving technique, such as the 'chunk and check' method (Silverman et al. 2005). This method encourages veterinarians to give small 'chunks' of information and check for understanding before giving more information (Silverman et al. 2005). Ascertaining a client's communication and information preferences is another way of promoting owner participation during a clinical consultation and is included in frameworks promoting effective veterinary-client communication e.g., Calgary-Cambridge communication guides (Radford et al., 2006) and the SPIKES model (Baile et al., 2000).

An alternative paradigm for owner-veterinarian interactions focusses on allowing the client to decide how much of a role their veterinarian plays in the decision-making process (Christiansen et al., 2016; Janke et al., 2021a; Yeates & Main, 2010). For this alternative form of autonomy to be achieved, there is an expectation that information will be given to clients in a direct and jargon-free manner and their participation preferences elicited (Stoewen et al., 2014). In line with this paradigm, Yeates and Main (2010) argue veterinarians can exert influence over their client's decision-making in circumstances when the client has asked them to. In this case, veterinarians may lead the decision-making process, while still respecting client autonomy because the client has delegated the veterinarian this role (Rollin, 2011;

Yeates & Main, 2010). Within this veterinary-client communication style, the veterinarian can answer the ‘what would you do?’ question and direct a client towards euthanasia of their animal (Rollin 2002).

Veterinarians can also share in the decision-making process with their client (Charles et al., 1997; Christiansen et al., 2016; Rollin, 2002; Spitznagel et al., 2018). Shaw et al. (2006) described this shared communication style, found in 42% of appointments in a companion animal practice, as a partnership between veterinarian and client with a focus on creating a joint venture or ‘relationship’. The ‘chunk and check’ method is further refined in this approach by also taking the client’s perspective into account, that is, at part of the ‘checking’ process (Silverman et al. 2005).

Shared decision-making may have a role in preventing caregiver burden, as it increases the sense of control owners have over the situation while simultaneously providing them with the veterinary expertise they seek (Charles et al., 1997; Spitznagel et al., 2018). Shared decision-making may be linked to client autonomy, as it involves a two-way exchange of information and an agreement on how to proceed, that is, an informed choice. Importantly, this decision-making relies on a shared understanding of preferences and therefore is likely only possible in an ongoing relationship between veterinarian and client (Charles et al., 1997; Christiansen et al., 2016).

Veterinarians who share the EoL decision-making process are less likely to be accused of forcing clients to euthanase their animals, while still acknowledging their role as an animal care professional (Rollin 2002). However, this 'relationship-centred' model, despite sounding romantic, is an anthropocentric approach to veterinary communication. This approach emphasises the role of the animal in the owner-client's life over considerations about the animal's QoL. Shaw (2013) argues that this communication approach has implications for veterinary professionals, clients, and patients and yet the evidence for this statement is derived from physician-patient communication research. Therefore, the animal, and its QoL, is still not explicitly included in this communication paradigm.

The roles veterinarians assume when interacting with their clients can be linked to their ethical concern towards animals. They can act as garage mechanics within a utilitarian 'animal as object' framework where their goal is just to diagnose and/or fix animals (Rollin, 2002; Rollin, 2007). This framework is likely to result in paternalistic veterinary-client communication styles. Alternatively, veterinarians can be akin to paediatricians and treat animals as direct objects of moral concern by taking on a more nurturing role (Rollin, 2002; Rollin, 2007). These veterinarians may use persuasive tactics to influence their client when their choices are not 'reasonable' (Christiansen et al., 2016; Yeates & Main, 2010). However, as Rollin (2002) argues, the major difference between paediatricians and veterinarians is the role of the 'consensus social ethic' when it comes to decision-making. In paediatric care, an obstructive third party (e.g., a parent refusing to

allow necessary medical care) can be circumvented by a court of law. This is not the case for veterinarians and their animal-owning clients (Rollin 2002). The Strong Patient Advocate concept recognizes that veterinarians are obligated to their patient, that is, the animal under their care, and aligns with Codes of Professional Conduct for Veterinarians, but does not give due consideration to the legal status of animals as human property (Anonymous, 2011, 2012; Coghlan, 2018).

Overall, it is apparent that veterinarians need to understand their client's personal circumstances and assist them with decision-making for their animal (Christiansen et al., 2016; Heuberger et al., 2016; Spitznagel et al., 2020). The veterinarian may have to take on several different roles, dictated by the client, to achieve this. How they interact and their relationship would facilitate the veterinarian fulfilling the role desired by a particular client. Flexibility in approach and appreciation of context, coupled with clients' needs, means that the veterinarian can adopt a style best suited for that veterinary-client interaction (Shaw et al., 2006; Shaw, 2013).

Veterinary-client communication during euthanasia decision-making for companion animals

This section is framed around communication strategies that can be used during a clinical consultation where an owner has presented their companion animal (CA) for diagnostics that later result in a terminal (or complex) diagnosis, or where the owner is unsure whether to euthanase their CA.

Information can be gathered from a client using open- or closed-ended questions (Cornell & Kopcha, 2007; Dysart et al., 2011; Radford et al., 2006; Shaw, 2006). Both types of questions are useful during clinical discussions and can be used together to gather as much data as possible about an animal (Cornell & Kopcha, 2007; Dysart et al., 2011; Radford et al., 2006; Shaw, 2006). Shaw (2006) recommends a ‘funnel technique’, that is, starting broad by asking owners open-ended questions about their reasons for presenting their animal for veterinary evaluation. These questions are followed by targeted closed-ended questions to clarify details. This approach has the added benefit of promoting owner participation (Shaw, 2006). Reflecting an owner’s message back to them in one’s own words is another way of demonstrating understanding and listening skills and helps to develop a harmonious relationship, that is, rapport (Cornell & Kopcha, 2007; Knesl et al., 2016; Shaw, 2006).

Another way of establishing rapport with clients is via acknowledging and demonstrating understanding of the client’s predicament. This can be achieved using empathy (Radford, 2013). In this context, Radford (2013) uses empathy as “...not only a personal recognition of how a client may be feeling but letting the client know of our awareness” (Radford, 2013, pg. 36). This description of empathy most closely aligns with the ‘psychological empathy, projection, or perspective-taking’ concept of empathy or the ‘imagine other’ perspective (Batson, 2009). To achieve this type of empathy, a veterinarian would use the strategy of ‘naming’ their client’s emotions with phrases such as “*I can see you are very upset*” (Radford, 2013, pg. 36).

However, the limitation of this type of empathy is that it relies on us having a theory of what other people are likely to feel. Conversely, simulating or projecting oneself into the other's situation or imaging one's own feelings in the other's place allows us to feel as the other feels (Batson, 2009), but may lead to feelings of moral distress (Fawcett, 2013; Moira & Van den Brink, 2020; Rollin, 2011).

These empathy constructs are limited to human-human relationships. Human empathy towards animals ('animal-orientated empathy') has been studied (Paul, 2000), however, this psychometric scale has questions that could be misinterpreted. For example, strongly agreeing with the statement "*I get annoyed by dogs that howl and bark when they are left alone*" (Paul, 2000, pg. 202), could be interpreted as not being empathetic towards the dog's behaviour at being left alone, or strongly empathetic towards the dog's *plight* at being left alone, that is, not empathetic towards the dog's owners.

Shaw (2006) presents three broad skills that contribute towards effective communication: Content skills relate to the information or 'what' is presented (e.g., clinical or technical details), Process skills are 'how' or the 'style' this information is presented, or gathered, and includes verbal and nonverbal methods (Adams & Kurtz, 2006; Radford et al., 2006), and Perceptual skills are dictated by a person's cognitive and relationship skills, for example, by their personal attitudes and awareness of others (Shaw, 2006).

The general communication strategies described above are often taught together, and this can be easily achieved by using a framework or model for effective communication, for example, Calgary-Cambridge communication guides (Radford et al., 2006) or the SPIKES model for delivering bad news (Baile et al., 2000). The Calgary-Cambridge Guides are widely used in veterinary communication training and provide a useful framework for developing 'process' communication skills, that is, they promote an effective *style* of communication (Adams & Kurtz, 2006; Radford et al., 2006). The veterinary Calgary-Cambridge model was developed based on the version for physicians (Kurtz & Silverman, 1996) and is designed to be taught and used in role play scenarios with veterinary students and actors (Radford et al., 2006). The authors recognised the need to modify the veterinary version to reflect the 'tripartite nature' of veterinary consults, that is, they include veterinarian, patient/animal, and client/owner (Radford et al., 2006).

The original style of medical consultation was still retained in the modified (veterinary) Calgary-Cambridge guide by taking a "*patient-centred and collaborative*" approach (Radford et al., 2006, pg. 39). However, this approach has not translated to patient/animal-centred care, but instead focuses on client/owner-centred care with the result that the animal is secondary to the client throughout the modified guide. For example, the authors refer to a need to "*attend to client's and animal's physical comfort*" during the 'Initiating the Consultation' phase of the modified guide, but the animal is only sporadically considered

throughout, usually after the client, and without a framework for such consideration (Radford et al., 2006, pg. 39).

Physical comfort is not the only need an animal has. Instead, we now recognise animal needs in five dimensions, or ‘domains’ (Mellor et al., 2020). Therefore, limiting consideration of an animal’s welfare to its comfort level is insufficient for a truly ‘tripartite’ veterinary consultation. Despite acknowledging the importance of understanding ‘what the animal wants’, the veterinary Calgary-Cambridge guide does not discuss how this might be achieved, that is, how to assess animal welfare or QoL. Therefore, there is still a need for animal welfare assessment to be explicitly linked to communication skills training for veterinarians to reduce the risk of overtreatment or dysthanasia (i.e., ‘difficult death’) of animals resulting from ‘miscommunication’ about their QoL (Quain et al., 2021).

Another communication framework that could be useful in EoL conversation is the six-step SPIKES model. This model was originally developed for human medics to deliver bad news (Baile et al., 2000). It has been used to train veterinary students to deliver bad news during consultations and as a structured approach to euthanasia decision-making discussions (Shaw & Lagoni, 2007). The six steps of the model’s mnemonic encourages users to consider:

- Setting up the interview (i.e., consider private location and people involved in conversation, establishing rapport with open-ended questions),

- Perception (i.e., client's perspective of what is wrong with animal and desire for information),
- Invitation (i.e., permission to share information),
- Knowledge and information provision (i.e., providing a warning 'shot' of what is to come, delivering bad news in stages e.g., 'chunk and check' for understanding using open-ended questions),
- Emotions and empathetic responses (i.e., acknowledging, validating, and normalising client's emotions),
- Summarise and strategise (i.e., summarise discussion, discuss plan).

A veterinary-specific addition to the 'Knowledge' step for EoL discussions includes *"provide accurate and detailed information about the animal's condition"* (Shaw & Lagoni, 2007, pg. 102). However, the model does not provide guidance on how this might be achieved or how veterinarians or animal-owning clients might decide when an animal's life is no longer worth living (i.e., how to evaluate the animal's QoL using welfare indicators). Additionally, the 'Perception' step invites veterinarians to consider the animal's purpose for the client and defers decision-making to them. Shared veterinary-client decision-making is not possible without effective ways of sharing the information underpinning the decision in a structured and coherent way.

Gray & Moffett (2013) advocate a similar approach to veterinary EoL communication using a seven-step tool that separates the client's perspective

(‘Perception’) of what is wrong with animal and their desire for information into two steps. Critically, ‘welfare concerns’ are discussed separately to the model and not explicitly integrated within its approach thereby focusing on the ‘how’ rather than the ‘what’ of human-animal-related communication (Gray & Moffett 2013).

The need for veterinary-specific communication strategies has implications for how veterinary-client communication should be taught in veterinary schools. In their survey of veterinary students and recent graduates, Tinga et al. (2001) found that 37% of graduates felt uncomfortable dealing with demanding people, 25% about delivering bad news, and 20% about interpreting peoples’ non-verbal behaviour and conducting client-present euthanasia. This points to the importance of incorporating targeted veterinary-client EoL communication training in veterinary schools.

Veterinary schools in the United Kingdom (UK) advocate approaches adapted from training medical practitioners and cite the Calgary-Cambridge consultation framework (Kurtz & Silverman, 1996) as one such example for teaching consultation structure, techniques, and delivery (Mossop et al. 2015). Interactive sessions using simulators, or trained actors, represent an experiential approach to this teaching and have improved communication outcomes (e.g., improved clinical outcomes and client information retention) over purely didactic delivery (Latham & Morris, 2007). At UK veterinary schools, communication skills are assessed using a mix of formative and summative approaches, such as student performance

during a specific consultation scenario and reflective portfolios and diaries (Mossop et al. 2015). The focus of much of this training is on *how* to communicate with clients, rather than *what* to communicate. There is still a need to integrate welfare indicators into frameworks for veterinary EoL communication training, and “*providing the correct amount and type of information*” is an important communication skill necessitating assessment (Latham & Morris, 2007, pg. 182).

Veterinary-client communication during grief management resulting from euthanasia of companion animals

Once an animal is deceased, the veterinary communication strategy and relationship moves from consideration of three parties (veterinarian-client-patient) to two (veterinarian-client). Much has been written about veterinary and client grief management in EoL situations for veterinarians (e.g., Adams et al., 1999; Marton et al., 2019; Peck, 2005; Testoni et al., 2019). These approaches have been discussed in the preceding section of this chapter (see **Models of veterinary-client relationships and communication styles**). However, it is at this stage that the human medical communication literature could offer some insights into how veterinarians might effectively relate to (i.e., communicate) with their grief-stricken clients following the loss of their animal. To illustrate, Van der Geest et al. (2014) explored the influence of parents’ perceptions of their interactions (e.g., communication and parental involvement) with health care professionals during paediatric palliative care on their subsequent grief when their child died of cancer. Parents rated communication (e.g., clear information about prognosis and when

delivering bad news, availability of health care professionals, opportunity to express their emotions), continuity of care, and parental involvement as important during the palliative phase (Van der Geest et al., 2014). Those parents who rated these factors highly experienced lower levels of long-term grief.

Also of importance to these parents was how well their child's symptoms were managed. Factors such as the child's dyspnoea severity, anxiety, anger, and uncontrolled pain were significantly associated with higher levels of long-term grief for these parents (Van der Geest et al., 2014). These results point to the importance of effective interactions between clinicians and proxy decision-makers (in this case parents, but in the case of this thesis, animal-owning clients) during EoL management. They also draw attention to the importance of 'symptom management' (i.e., QoL management) in patients when viewed from the perspective of these proxies. Van der Geest et al.'s findings also show that it is not just *how* bad news is communicated (i.e., communication styles and skills), but *what* is communicated (e.g., clear information about prognosis) that is important to people managing end of life and palliative care.

In summary, SPIKES is a useful protocol for delivering bad news in a veterinary setting. However, SPIKES focuses on 'how' or the 'style' of communication, that is, *process* communication skills (Shaw, 2006). SPIKES may be useful on its own to deliver the news that a veterinary client's animal has died while hospitalised (e.g., under anaesthesia, or after a protracted illness), but it does not offer strategies for

developing content skills associated with EoL management of animals. In other words, SPIKES does not provide guidance to veterinarians about ‘what’ to present to animal-owning clients during the EoL decision-making process.

Overall veterinary communication during EoL management of animals

Veterinary communication strategies during EoL management of animals should consider three parties: the animal/patient, the owner/client, and the veterinarian (**Figure 2.1**). Historically, veterinary communication frameworks have focused exclusively on the veterinarian-client relationship and/or briefly mentioned the animal/patient (e.g., Radford et al., 2006; Shaw & Lagoni, 2007; Gray & Moffett 2013). This anthropocentric approach may be a feature of the origins of veterinary communication in human-centred fields where the patient and client are typically the same individual. However, this approach does not represent the tripartite nature of veterinary clinical practice, that is, the animal is not considered.

Conversely, animal welfare assessments focus on the animal and its mental experiences (e.g., Mellor et al., 2020), while ethics considers how one ‘should’ manage or use animals (i.e., what is right and wrong). Ethics is helpful during decision-making but does not explicitly cover effective communication strategies for veterinary clinical practice (Mullan & Fawcett, 2017). Veterinary-client relationships can be enhanced by effective communication strategies (Adams & Frankel, 2007; Knesl, 2016; Main, 2013) and animal welfare can be enhanced by communication in the form of structured, systematic QoL assessments using

appropriate welfare indicators (Beausoleil & Mellor, 2017; Mellor et al., 2020). However, there is not an effective communication framework that integrates these approaches to recognise the tripartite nature of the veterinarian-client-patient interaction. Communication strategies during veterinary EoL management of animals that focus solely on ‘how’ to deliver bad news without consideration of ‘what’ that news is (i.e., the information that needs to be provided to animal-owning clients) risk compromising both animal and human wellbeing.

Legal and professional obligations of veterinarians

Veterinarians are now often regarded as experts in animal welfare in many contexts and have special legal and professional obligations (Golab & Turner, 2010; Anonymous, 2011). In addition to these obligations, veterinarians have a ‘duty of care’ to the animals under their care (Mullan & Fawcett, 2017; Main, 2006). This duty extends to their clients, as the owners of the animals they care for. In a broader sense, veterinarians, as professionals, are held to account by the wider public. There is an expectation that veterinarians will act professionally and use their skills for the benefit of both animals and people (Anonymous, 2011; Mullan & Fawcett, 2017).

Veterinarians, as proposed ‘experts’ in animal welfare, have a role to play in EoL management of animals and have special legal and professional obligations (Anonymous, 2011). The New Zealand Code of Professional Conduct for Veterinarians expressly mentions the duty of veterinarians “*to protect animal*

welfare and alleviate animal suffering” (Anonymous, 2011, p. 7). When a veterinarian is considered to be the ‘person in charge’ of an animal, various sections of The New Zealand Animal Welfare Act 1999 apply. In particular, Section 11 states:

“The owner of an animal that is ill or injured, and every person in charge of such an animal, must ensure that the animal receives treatment that alleviates any unreasonable or unnecessary pain or distress being suffered by the animal” (Anonymous, 1999, p. 25)

The Act also reminds us that a person is not required to keep an animal alive if it is “...*suffering unreasonable or unnecessary pain or distress.*” (Anonymous, 1999, p. 26)

Veterinary competency in EoL management

In order to fulfil these legal and professional obligations, EoL management should be carried out by a competent veterinarian, usually in consultation with the animal’s owner. Veterinary competency in EoL management is important not only for the animal and owner, but also for the veterinarian and their profession. It has economic advantages; a ‘good’ euthanasia may result in additional revenue, and a veterinarian who ends the life of an animal competently may represent the difference between their client returning to the practice following the event or not (Brockman et al., 2008). In addition, carrying out a job ‘well’ engenders a sense of pride that is invaluable to workplace satisfaction (Wright & Bonett, 2007), which in turn is important for personal wellbeing (Black et al., 2011; Cake et al., 2016; Morris, 2012). Accordingly, competency in EoL management not only benefits the

veterinarian, and their profession, but it is also expected of them (Anonymous, 2011).

The Veterinary Council of New Zealand (VCNZ) considers a competent veterinarian to be one who:

“...applies knowledge, skills, attitudes, communication and judgement to the delivery of appropriate veterinary services in accordance with their field of veterinary practice” (Anonymous, n.d., p. 1).

Successful EoL management relies on veterinary competency in a range of skill areas, some of which can be taught in a formal setting (e.g., euthanasia methods, QoL indicators, communication skills), while others rely on opportunities to practice technical skills, for example, catheter placement (Norman, 2016). For the latter, veterinary competency tends to result from workplace-based learning; it is taught and learnt ‘on the job’ (Magnier et al., 2011; Norman, 2016).

The VCNZ has eight competency standards and performance indicators for veterinarians based on the graduating competencies of Massey University’s Bachelor of Veterinary Science students (Anonymous, n.d.). Of particular relevance to my research is the fifth standard, which includes the statement:

“Evaluates the need for euthanasia and, when required, carries it out safely and humanely, with the informed consent of the owner (where known) and using procedures appropriate for the species concerned and the circumstances” (Anonymous, n.d., p. 3).

Aspects of EoL management

Competency in three aspects of EoL management are required of veterinarians. The first is the technical skills involved in ending an animal's life in a humane manner, that is, performing euthanasia. EoL decision-making is another aspect, which includes welfare or quality of life (QoL) assessments among other factors covered in the preceding section. Finally, grief management for both the owner and veterinarian is a key aspect of competency in EoL management.

Technical aspects of euthanasia

The technical aspect of ending an animal's life requires knowledge of, and veterinary competency in applying, the appropriate method of euthanasia. This includes the drug used or firearm placement, the route of administration if applicable, for example, intravenous or intraperitoneal, and any preparation for euthanasia, for example, sedation or catheterization of the patient. It is tautological to refer to 'humane euthanasia' (e.g., Hart et al., 1990) because, by definition, an animal is killed in a humane manner when the technique used induces the most rapid, painless, and distress-free death possible (Leary et al., 2020; McMillan, 2001). In other words, killing must be humane to qualify as euthanasia. However, an increasingly popular addition to the criteria for labelling animal killing as euthanasia is that death be in "*an animal's interest and/or because it is a matter of welfare*" (Leary et al., 2013, p. 6; Leary et al., 2020); this adds a second dimension to the term that may be more commonly understood by lay animal-carers

(Anonymous, 2012; McMillan, 2001; Yeates, 2010). It is clear that these two criteria separate technical euthanasia from EoL decision-making, but that both are important to the overall term 'euthanasia'. In other words, the reason for killing an animal is linked to how the killing is defined.

The ability to end an animal's life in a humane matter is an important feature of becoming a competent veterinarian. There are a number of guidelines available for veterinarians to become proficient in carrying out euthanasia (e.g., Leary et al., 2020) or humane slaughter (e.g., Leary et al., 2016). These guidelines are broken down into the types of methods that can be used, for example, physical or chemical, and the animal species they can be used on. The American Veterinary Medical Association distinguishes between techniques that are humane for each animal species, and those that are not, or that must be used with caution or with a secondary technique (Leary et al., 2020). For a technique to be considered humane, it must cause an animal to become unconscious quickly, cause minimal compromise to the animal's welfare before loss of consciousness, and effectively cause death (Leary et al., 2020).

Veterinary and owner grief

Owner grief was discussed briefly in a preceding section. It is important for veterinarians to acknowledge owner grief as they may be one of the few people in an owner's life who understands a grief response resulting from the loss of an animal (Dawson & Campbell, 2009; Matte et al., 2020). However, compassion

fatigue and moral stress are problematic for veterinary practitioners. Euthanasia is a leading cause of moral stress for veterinarians (Fawcett, 2013; Moira & Van den Brink, 2020; Rollin, 2011). Moral stress resulting from animal euthanasia is caused by a conflict between the veterinary profession's *raison d'être*¹, that is, promoting the well-being of animals, while also being responsible for killing the animals under their care (Fawcett, 2013; Matte et al., 2019; Rollin, 2011). Veterinarians can rationalise their killing role, as a means of focusing on the positive side of EoL veterinary work (Cake et al., 2015), as a tool to alleviate animal suffering (Persson et al., 2020). However, for many, this justification is insufficient to counter the development of compassion fatigue and a permissive attitude towards death that has resulted in the profession having an above average suicide rate (Fawcett, 2013; Persson et al., 2020; Rollin, 2011). Thus, managing compassion fatigue, moral stress, and personal grief are critical to veterinary wellbeing. Cake et al. (2015) identified 'helping animals' as a contributing factor meaningful to veterinary work in their model of positive contributions to veterinary wellbeing. Therefore, it stands to reason that when an animal's life needs to be ended, veterinary wellbeing is at risk of being harmed.

A pronounced cause for concern amongst veterinarians is 'convenience euthanasia' where veterinarians are asked to kill apparently healthy animals that owners are unable to care for (Fawcett, 2013; Folger et al., 2012; Rollin, 2011). Despite the

¹ *Raison d'être* is derived from French and refers to one's reason for existence Dictionary, O. E. "*raison d'être, n.*". Oxford University Press.

important role convenience euthanasia plays in veterinary grief, I have chosen to exclude consideration of this type of euthanasia from this thesis. This is because convenience euthanasia is not relevant to my work focussing on older or chronically ill cats.

Teaching aspects of EoL management in Australasia

Given how important veterinary competency is to EoL management and animal welfare, it follows that it should be taught to future veterinarians. The first study in this thesis examines how veterinary students are trained in skill areas relevant to their future role in EoL management. The idea behind this study was that the relative importance of EoL management, inferred from whether, when, and how relevant aspects are taught, in veterinary schools reflects the perceived role of veterinarians in this area. Because this thesis aims to explore the role of veterinarians in EoL management of animals in New Zealand, I explored this teaching in Australasian veterinary schools. The majority (70%) of New Zealand practising veterinarians are trained domestically (Anonymous, 2019). A number of clinicians are trained in other countries but must be registrable with the VCNZ therefore should demonstrate competency comparable to Australasian graduates.

In addition to the VCNZ Standards for practising veterinarians, New Zealand's only veterinary school, and several of Australia's, must teach to standards set by The American Veterinary Medical Association Council on Education®, the Royal College of Veterinary Surgeons, and the Australasian Veterinary Boards Council

Inc. in order to maintain accreditation (Anonymous, 2020a, 2020b, 2021a). This ensures that graduates of these schools are sufficiently competent to practice in the United States, the United Kingdom, and/or Australasia respectively. Their guidelines list expected competencies or attributes of newly graduated veterinarians. The Royal College of Veterinary Surgeons 'Year One Competencies' include a section on euthanasia in which 'performing euthanasia; techniques and their context', is listed alongside 'client management' (Anonymous, 2016; Main et al., 2005). The purpose of such standards is to ensure that there is a direct link between what is taught in veterinary schools and what is expected of practising veterinarians. If EoL management is a key competency, or role, for veterinarians then it follows that it will be taught in the curriculum of Australasian veterinary schools.

Few studies have explored how veterinary competency in EoL management is taught to veterinary students, and none have done so for Australasian veterinary schools. The research indicates that EoL teaching varies by the extent of this teaching and when in the veterinary curriculum it occurs. For example, group discussions, scattered across courses and on clinical rotations, were the teaching method of choice in the UK (Dickinson & Paul, 2014). In contrast, in the USA, EoL management was taught as a set module within a course or was offered separately (Dickinson et al., 2010). An informal survey designed by veterinary students at Tufts University found that 24 of the 30 North American veterinary colleges taught euthanasia most commonly during clinical rotations. Ethics, oncology, and

pharmacology courses were the next most common curriculum locations for euthanasia teaching in the veterinary colleges surveyed (Cohen-Salter et al., 2004).

The details of what is taught in EoL veterinary curricula also vary. Three topics were consistently taught across six UK veterinary schools: communication with owners of dying animals, euthanasia, and analgesics for chronic pain (Dickinson & Paul, 2014). In the informal Tufts veterinary student survey, the top three euthanasia topics of interest to the students were: talking with clients, techniques, and dealing with things that could go wrong (Cohen-Salter et al., 2004).

A potential issue with some of these earlier studies is that they have relied on curriculum documents or information obtained from heads of school or department (e.g., Dickinson & Paul, 2014; Dickinson et al., 2010; Shivley et al., 2016). The reliability of curriculum mapping is questionable, and heads of department are not always aware of the details of what is taught by their staff (Bath et al., 2004). By interviewing the staff actively teaching EoL management to Australasian veterinary students, my research aims to obtain a more detailed picture of what they are being taught (Charles et al., 1997; Magalhaes-Sant'Ana et al., 2014).

Another aspect to consider is whether what is reportedly taught is the same as what is being learnt by students. Students are increasingly concentrating their learning towards what they need for assessment or what they are led to believe is important

by other students and educators; this phenomenon is known as the 'hidden curriculum' (Gibbs & Simpson, 2005; Sambell & McDowell, 1998). It is believed the hidden curriculum still exists in professional degrees (Hafferty, 1998; Mossop et al., 2013), such as veterinary medicine (Larkin, 2017), where student learning is encouraged not for grades, but for professional competency. Examining the assessment of EoL management as well as exploring attitudes of veterinary students and educators towards animal welfare and EoL management may be informative in the future.

In attempting to balance the needs of an animal with the owner's wishes, the veterinarian has a challenging role when involved in EoL management. This is particularly the case for older and chronically ill cats in New Zealand. Very little is known about New Zealand cats, owner considerations, and the role, or roles, of the veterinarian in managing the process of ending these animals' lives.

2.4. References

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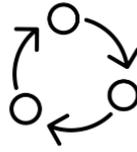
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CHAPTER 3: Methodology



The purpose of this research was to explore the veterinarian's role in end-of-life (EoL) management of older and chronically ill cats in New Zealand. To achieve this, the research was conducted as two inter-related studies. The first focused on when, how, and by whom, subjects relating to EoL management were taught to students in Australasian veterinary schools. The aim was to describe teaching in three areas: euthanasia techniques; EoL decision-making; and grief management. I asked questions about EoL teaching relating to a range of animal species. This was followed by a second study which retrospectively explored the perspectives of cat owners following the euthanasia of their companion. Questions sought to explore: the factors involved in EoL decision-making; how cat owners assessed feline quality of life (QoL); what 'good' QoL for a cat meant to owners; and what the veterinarian's role was in the decision-making process. Together, these two studies explored the veterinarian's role in EoL management by examining how veterinary students were taught and how this role was enacted in the treatment of older and chronically ill cats.

I begin this chapter by describing my philosophical stance and the rationale for the research approach I have chosen. I then move on to give an overview of the research design, methods of data collection and their analysis, before concluding

by describing the rigour of the research. I will then reflect on my background and how it may have impacted upon the design of studies undertaken as part of this PhD (Maxwell, 2009). This reflexive approach allows me to critically evaluate my involvement in the research and how it has impacted the processes and outcome (Bloomberg & Volpe, 2016). This in turn allows the reader to assess the quality and context of my research. The chapter culminates with a brief concluding summary of what this all means for the presentation of this thesis for examination.

3.1. Rationale for research approach

In this section, I discuss my approach to understanding the veterinarian's role in end-of-life (EoL) management of animals and how and why I have selected this approach. Informing this decision are philosophical assumptions, the research design I have chosen, and the specific methods of data collection, analysis, and interpretation. The research approach I have selected is also based on the nature of the research problem and my personal experiences, discussed in a later section (Bloomberg & Volpe, 2016; Clarke & Braun, 2013; Creswell, 2014; Polkinghorne, 2005).

Rationale for social science inquiry

This research is grounded in a *constructivist* theoretical position, that is, it seeks to examine a particular social situation and achieve a holistic understanding of others' experiences (Bloomberg & Volpe, 2016; Crotty, 1998). The situation being examined in this case is the veterinarian's role in EoL management of animals. My

choice of a social science approach for this research aligns with the focus on holistic experience. This is in contrast to the quantitative, hypothesis-driven approach used to explore this topic by previous researchers which has limited our understanding of this complex situation by excluding an experiential methodology. A social science approach is more likely to produce the rich data needed to address the purposes of this research.

The ontological position of this research is that of *critical realism* (Braun & Clarke, 2013); I believe there are actual beliefs that people hold that contribute to decisions and practices about euthanasia. Knowledge is socially influenced so we can only know parts of reality, but those parts that we are able to access are real and produce information that can be used to make a difference to society (Clarke & Braun, 2013; Crotty, 1998). Therefore, according to this ontological position, the themes identified as a result of this research reflect realities that exist in the world. Once identified, these can be used to influence the role of veterinarians in EoL management of animals.

During this research project, my worldview has moved away from *positivism*, the dominant theoretical position in veterinary science according to which true knowledge is only discovered through research resulting from an experimental design (Bloomberg & Volpe, 2016; Braun & Clarke, 2013; Crotty, 1998). I now recognise that knowledge reflects our perspective and cannot be separated from this to create so-called 'objective' data. Thus, I acknowledge that the information

obtained here has been formed as a result of the research process and I have had an active role in creating it (Bloomberg & Volpe, 2016; Curtis & Curtis, 2011b; Maxwell, 2009).

As a veterinarian and cat owner, I have personal experience of some of the beliefs and practices explored in this project. I have taken an inductivist (theory building) approach to collecting and analysing the data; it was my intention to draw conclusions from the data and explore alternative reasoning, rather than test a pre-conceived theory (Burnard et al., 2008; Crotty, 1998; Curtis & Curtis, 2011b). This is in contrast to current research in this area, which has thus far used a deductive (theory testing) approach.

Brief description of methods

Because this research is presented as a thesis by publication, fuller details of the methods are included in the papers that follow. This section gives a brief description of the methods used, and the rationale for their use, to locate them within the wider methodological approach to this research.

Social science research tends to use case studies and analysis of texts, or open-ended questions posed to subjects, rather than the numbers or closed-ended questions used in traditional quantitative research (Bloomberg & Volpe, 2016; Braun & Clarke, 2013). The data analysed in this social science research is textual, resulting from interviews with participants. Interviews were chosen as they best

suited the exploration of the veterinarian's role in EoL management of animals in rich detail.

A pattern-based analytic method, thematic analysis, was used (Braun & Clarke, 2006, 2013, 2014; Braun et al., 2015; Clarke & Braun, 2013). Analysis sought to identify themes and patterns of meaning in relation to the research question for each study.

Study 1

Data were collected in structured interviews with educators ('the participants') at all eight veterinary schools in Australasia. An interview guide was used, and participants were asked identical questions by a representative at each veterinary school. The structured interview was designed to answer the overall question 'how are veterinary scientists being taught EoL management for animals in New Zealand and Australian veterinary schools?' There were six questions divided into three sections (EoL decision-making, technical management, and grief management). Each question was a combination of binary (yes/no) and open-ended questions. Demographic information recorded for each school included: number of participants interviewed, the gender and graduation year of each (highest degree), number of participants who taught relevant material for each category of animal, estimated total number of staff who taught veterinary science students at the school and average number of veterinary science students in each annual intake. Details of the degree structure for each school were also recorded. I used

categorical data from individual schools to construct tables in Microsoft Excel. Thematic analysis (Braun & Clarke, 2006; Braun et al., 2015; Curtis & Curtis, 2011b) was performed on the open-ended textual data and results were descriptive with some frequency data presented.

Study 2

In study 2, I interviewed owners who had recently euthanased their cat. I developed interview guides that covered the topics of interest, but I adapted questions to the situation and interviewee, to encourage participant engagement. Owners were recruited via advertisements on social media directing them to complete an online survey if they were interested in being involved. The recruitment criteria for cat owners to be included in this study were individuals who: lived in New Zealand; were over 18 years of age; had made the decision to euthanase their own cat within the last 6 months; and provided contact details. A total of 127 owner participants fulfilled the recruitment criteria.

Purposive sampling (Braun & Clarke, 2013; Maxwell, 2009; Polkinghorne, 2005) was then used to select owner participants who had euthanased their cat within the last 3 months. This timeframe was chosen so that participants were more likely to recall sufficient details during their interview to provide a rich understanding of their own experience. Convenience sampling (Braun & Clarke, 2013) was also used to select participants who were located in proximity to one another. Semi-structured interviews continued until saturation was reached, that is, the point at

which participants were not mentioning new information to me (Curtis & Curtis, 2011a; Polkinghorne, 2005).

In total, I interviewed fourteen cat owners. Interviews were recorded and transcribed intelligent verbatim (Bazeley, 2013; Braun & Clarke, 2013). Transcripts were explored for themes using Template Analysis in NVivo qualitative analysis software (Bazeley & Jackson, 2013; Brooks et al., 2015; King, 2012). Template analysis is a highly structured form of thematic analysis which emphasises hierarchical coding and the development of a coding template (Brooks et al., 2015). This coding template is created using a subset of data, applied to further data, revised and refined. However, template analysis still retains the flexibility to adapt to the needs of a study (Brooks et al., 2015; King, 2012). An example of this flexibility occurs when a template of preliminary themes is developed from initial interview transcripts, but these themes and their relationship to each other change as subsequent transcripts are analysed. This approach to qualitative data analysis appealed to my positivist background in veterinary science as it allowed for structured coding, while still retaining some flexibility.

Thematic analysis is a pattern-based analysis method commonly used for interview data (Curtis & Curtis, 2011a) and allows for rigorous analysis of qualitative data (e.g. Braun & Clarke, 2006, 2013, 2014; Braun et al., 2015; Clarke & Braun, 2013; Curtis & Curtis, 2011a). The next section describes this rigour. Thematic analysis is well suited to the exploratory nature of this research by virtue of its adaptability. This

technique supports inductive (theory building) reasoning and analysis and does not require development of pre-conceived theory relating to the data (Burnard et al., 2008; Crotty, 1998; Curtis & Curtis, 2011b).

3.2. Issues of trustworthiness and rigour

Social science research has well established guidelines and methodologies in psychology and other social sciences (Braun & Clarke, 2006; Brooks et al., 2015; Crotty, 1998). However, its use has not been well described in veterinary and animal sciences (May, 2018). Metrics such as repeatability, reliability, and generalisability are not features of true social science research (Creswell, 2014; Polkinghorne, 2005). Instead, social science research sets out to explore and understand why or how particular individuals think or act about a research problem (Polkinghorne, 2005; Stewart et al., 2008).

Social science researchers recognise that they are an active participant in the research they carry out (Polkinghorne, 2005). In other words, the researcher has a role in producing the data. For example, they assist an interviewee to produce an account (a 'co-creation') of an experience being studied (Polkinghorne, 2005). The questions asked, study design, and methods of analysis chosen all result from the particular lens or perspective, through which the researcher views the world (Braun & Clarke, 2006; Crotty, 1998; Maxwell, 2009; Polkinghorne, 2005). This lens in turn reflects the researcher's background and philosophical stance, as well as their approach to scientific research.

Because the researcher plays such an active role in data collection and analysis, it is important that their lens and inherent bias are appropriately described. Instead of the traditional statistical analysis and use of thresholds for significance of differences or effects (e.g., p-values), the researcher must assess their findings against their own prejudices or belief systems (Polkinghorne, 2005). The rigour of social science research is thus evident when the researcher is able to describe their background and philosophical stance appropriately and reflect upon the consequences of these in the processes and outcomes of data collection and analysis (Polkinghorne, 2005). This allows the reader to understand where the data have developed from, that is, how studies were designed, and what this data means in the context of other research in the field (Maxwell, 2009).

3.3. My background

I am a small animal veterinarian in my mid-thirties, and my husband and I have a 16-month-old daughter and two middle-aged cats. What follows is a brief reflection on my personal experiences with animal euthanasia and how these experiences have critically informed this research. I chose this PhD topic due to my earlier experiences with pet euthanasia, both professionally and personally.

Pet ownership and euthanasia

I had a number of companion animals growing up: cats, dogs, guinea pigs, and lambs. In my second year of veterinary school, my family and I made the decision to have our cat euthanased. She was 21 years old, and I had had her since childhood.

She had a chronic illness (hyperthyroidism) and her quality of life had declined slowly over the course of a year. When I saw her for the first time in more than three months, she was gaunt, her eyes were dry-looking, and she was dehydrated. She was also not interacting with the family. But she was still purring when picked up.

My parents were taking her in for three-monthly 'geriatric health checks' with the local veterinarian. At the last appointment, the veterinarian had apparently told them she was still going well, but that maybe the time was approaching to make a decision. He had not given my parents any particular recommendations or advice for making a decision to end her life.

At the end of it all I was left feeling like we had waited too long, that we had selfishly kept her alive for our own benefit. My parents were very attached to her and she was my childhood companion. But how had she experienced the final few months of her life? These questions would continue to plague me throughout my veterinary degree.

Experience as a small animal veterinarian

As a new graduate I undertook a one-year rotating internship at a small animal specialist facility. This meant I spent a year working with, and learning from, each of the groups of specialists; surgeons, medicine clinicians, and radiologists. One of the factors that stands out as a contributor to this research was my time with the

medicine group. The medicine specialists saw cats and dogs with non-surgical illnesses and diseases. As a referral service, we saw a number of challenging clinical cases that veterinarians in general practice were unable to treat themselves. The medicine specialists did all they could to help the owner and animal, but most of these cases had very poor prognoses. There were often times when heroic therapies were tried, and many times they failed. The result was that animals were not always experiencing an acceptable quality of life. It was not uncommon for me to have to euthanase several long-term patients during a weekend. In such situations, I was always surprised to learn that the medical specialist had apparently not discussed the possibility of euthanasia with the animal's owner before I did, and before the animal abruptly went downhill. It did make me wonder at the specialist's intention with treatment. I wondered if they were treating the animal or if they were treating the problem identified by the owner or referring veterinarian. There was no formal protocol to assess the wellbeing, welfare, or quality of life of the animal. We noted factors such as: how often, and the volume of food and drink consumed; and the number of times the animal vomited. The nurses were always very aware of animals' in pain and pain was quickly treated. But pain is not the only consideration for end-of-life decision-making. I felt out of my depth in terms of assessing the wellbeing of the patients under our care and I began to question the role of veterinarians for managing the end of animals' lives.

This question returned to me when I had completed my internship year and moved on to locum at a range of small animal clinics. I saw many animals who were near

the end of their lives and whose owners asked my opinion on when the best time to euthanase might be. I was unable to answer their questions. We talked through what their animal was or was not doing, but due to the limited appointment time and my limited knowledge in the area, I did not feel I did the animals, or owners, any favours.

My research project

The original aim of my PhD was to explore, and potentially develop, a QoL instrument for making end-of-life decisions in small animals. However, it became immediately obvious that there were already a vast array of quality of life assessment tools available, but none of them appeared to be consistently used by owners or veterinarians.

This made me wonder why this might be the case. Was it because they were not fit for purpose? Was there something else lacking in them? How do owners and veterinarians think about end-of-life management? Are any of these protocols being taught to veterinary students? And if not, what is being taught to them to make end-of-life decisions?

To develop a protocol for end-of-life decision-making, I first needed to explore how veterinary students were being taught to manage the end of animal's lives and how owners were currently making end-of-life decisions.

My thoughts about animal euthanasia

It is important to reflect on my thoughts about animal euthanasia at this stage. As a result of my experiences and background, I am an advocate for timely euthanasia. I believe that veterinarians' and animal owners have a shared responsibility to ensure that the animals under their care are not experiencing poor quality of life or compromised welfare. Because of this belief, if an animal is experiencing a negative welfare state with very little chance of return to normal, I am unlikely to recommend palliative or hospice care. I have come to believe palliative care of animals is done primarily for the benefit of owners and veterinarians, rather than for the animal. It gives owners more time to come to terms with the death of their pet or family member and it may help a veterinarian feel like they are treating the animal, if only palliatively, rather than 'giving in' to death. Death is final, and veterinarians can be forgiven for thinking of it as a last resort, rather than as a treatment option. However, I disagree and think that euthanasia is an appropriate treatment protocol for an animal whose quality of life and prognosis is poor. Contrary to what others may believe (e.g. Yeates, 2010), a humane death is not a welfare issue (Webster, 1994).

3.4. Conclusion

My worldview has shaped my approach to this research. Approaching this topic from a veterinary science background, I began with a positivist worldview (Bloomberg & Volpe, 2016; Braun & Clarke, 2013; Crotty, 1998). I sought to understand and measure quality of life in animals, or to create an instrument that

could be used to measure this phenomenon. I have since explored the issue in greater depth and breadth and can reflect on my change in worldview towards critical realism (Bloomberg & Volpe, 2016; Crotty, 1998). This evolution is apparent in the studies that form the basis of this thesis. The first study is grounded in positivism as it seeks to understand a complex situation by the use of coding of structured interviews (Bloomberg & Volpe, 2016; Braun & Clarke, 2013; Crotty, 1998). Additional details are supplementary, rather than integral, to the results.

However, the second study clearly shows a shift in my approach. By performing Template Analysis on interview transcripts, I have given participants the opportunity to reveal the complexities of the decision to end their cat's life from their own perspectives, rather than impose themes on them in a top-down approach, as the use of a questionnaire would do (Brooks et al., 2015; King, 2012). I have undergone a shift in my epistemological stance, from that of positivism, towards critical realism by allowing for inductive reasoning (Bloomberg & Volpe, 2016; Braun & Clarke, 2013; Crotty, 1998).

As part of recognising the active role they play in creating the research, social science researchers tend to write in the active voice, or first person. For this reason, as much as possible throughout this thesis, I will write in the first person. However, much of the data have been published in traditional scientific journals, where the third person or passive voice is preferred, therefore, some chapters will reflect this.

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CHAPTER 4: Technical euthanasia skills teaching



Exploring how end-of-life management is taught to Australasian veterinary students. Part 1: technical euthanasia

The material presented in this chapter has been published:

Littlewood, K. E., Beausoleil, N. J., Stafford, K. J., Stephens, C., Collins, T., Fawcett, A., Hazel, S., Lloyd, J. K. F., Mallia, C., Richards, L., Wedler, N. K., & Zito, S. (2018). Exploring how end-of-life management is taught to Australasian veterinary students. Part 1: technical euthanasia. *Veterinary Record*, *183*(691), 1-10. <https://doi.org/10.1136/vr.104775>

Results are presented in the style of the journal, and some of the Methods section is similar to that of **Chapter 3**.

4.1. Abstract

This descriptive study explored how end-of-life management was taught to students in all eight Australasian veterinary schools. A questionnaire-style interview guide was used by a representative at each university to conduct structured interviews with educators in a snowball sampling approach. Four categories of animals were addressed: livestock, equine, companion, and avian/wildlife. This article focuses on the first part of the questionnaire: teaching the technical aspects of euthanasia. Euthanasia techniques were taught at more universities in clinical years than preclinical years. Clinical teaching relied on opportunities presenting, for example, euthanasia consultations. Few universities gave students a chance to practise euthanasia during a consultation and those that did were all with livestock. Competency in euthanasia techniques is an important aspect of clinical practice and these findings can be used to inform curriculum reviews of veterinary training.

4.2. Introduction

As key advocates for animal welfare in western society (Anonymous, 2011, 2012), veterinarians contribute to maintaining the quality of their patients' lives and minimising their suffering (Hewson, 2003; Morton, 2010; Yeates, 2012). This role arises in part due to their ability to recognise, diagnose, and treat a range of diseases and disorders in animals, in addition to their knowledge of animal nutrition, husbandry requirements, and behaviour (Anonymous, 2011, 2012). Minimising animal suffering and maintaining quality of life includes managing the

end of animals' lives (Morris, 2012; Yeates, 2013). For the purposes of this discussion, the authors are referring to the period immediately surrounding an animal's death.

Previous research has identified three aspects of end-of-life (EoL) management in the veterinary context: EoL decision-making (Tinga et al., 2001), which includes welfare or quality of life (QoL) assessments; the technical skills involved in ending an animal's life in a humane manner (i.e., performing euthanasia) (Tinga et al., 2001); and grief management for both the owner and veterinarian (Shaw & Lagoni, 2007). Grief management and EoL decision-making are complex (Cohen, 2008; Hart et al., 1990; Shaw & Lagoni, 2007) and will be discussed separately. This article deals with the ways in which Australasian veterinary students are taught about the technical aspects of EoL management, including the approach to, and skills necessary to perform animal euthanasia.

Veterinary competency in technical EoL management is important for the veterinarian, their client and the vet-client relationship, as well as for the welfare of the animal. There are economic and reputational implications for the veterinarian and their profession that may influence whether a client returns to the practice following the euthanasia (Anonymous, 2011, 2012, n.d.; Brockman et al., 2008; Shaw & Lagoni, 2007; Wensley, 2008). Veterinarians are amongst the most trusted professions (Anonymous, 2015; Richmond, 2013). Competency is necessary to maintain this trust (Anonymous, 2016b). The New Zealand Code of

Professional Conduct for Veterinarians expressly mentions the ‘duty’ of veterinarians “to protect animal welfare and alleviate animal suffering” (Anonymous, 2011, p. 7). Carrying out a job ‘well’ also engenders a sense of pride that contributes to workplace satisfaction (Wright & Bonett, 2007), which in turn is important for personal wellbeing (Black et al., 2011; Cake et al., 2016; Morris, 2012). Accordingly, competency in EoL management is not only expected of veterinarians, it also benefits the veterinarian, and their profession (Anonymous, 2011).

The EoL process, and how it is handled by the attending veterinarian, can also affect clients (Adams et al., 1999; Hart et al., 1990; Martin et al., 2004). Negative experiences of EoL management may result in the client telling family and friends about their grievances or, in extreme circumstances, taking the matter further and making a formal complaint to the relevant veterinary regulatory authority (Stewart, 1999).

It is essential for good animal welfare that the animal is killed using a properly applied, humane method (Leary et al., 2013). Knowledge about the most humane method for terminating a particular species in a particular context and skill in carrying out this method to the highest standard (Morton, 2010) (i.e., competency) both rely on veterinary education and experience with these techniques (Magnier et al., 2011; Norman, 2016; Tinga et al., 2001). A number of publications detailing

euthanasia techniques exist (e.g. Leary et al., 2013). However, few studies have explored how EoL management is taught to veterinary science students.

The research indicates that EoL teaching varies by the extent of this teaching and when in the veterinary curriculum it occurs. Six of the seven veterinary schools in the UK reported some level of EoL teaching (Dickinson & Paul, 2014). This was compared with 80% of those in the USA (Dickinson et al., 2010). Group discussions, scattered across courses and on clinical rotations, were the teaching method of choice in the UK (Dickinson & Paul, 2014). In contrast, in the USA, EoL management was taught as a set module within a course or was offered separately (Dickinson et al., 2010). An informal survey designed by veterinary students at Tufts University found that 24 of the 30 North American veterinary colleges taught euthanasia more commonly during clinical rotations. Ethics, oncology, and pharmacology courses were the next most common curriculum locations for euthanasia teaching in the veterinary colleges surveyed (Cohen-Salter et al., 2004). Animal euthanasia was a common theme in a study of ethics teaching in European veterinary schools (Magalhaes-Sant'Ana, 2014). How much is taught and the method used to teach euthanasia (e.g. lectures, tutorials, clinical cases) has important implications for student learning. Applying knowledge to real-life cases or situations improves student retention of information and performance after graduation (Lane, 2008; Nandi et al., 2000).

The details of what is taught in EoL veterinary curricula also vary. Three topics were consistently taught across these six UK veterinary schools: communication with owners of dying animals, euthanasia, and analgesics for chronic pain. Eleven topics were covered overall (Dickinson & Paul, 2014). The first two topics were also covered most often in the USA-based study, with a total of 17 topics covered (Dickinson et al., 2010). In the informal Tufts veterinary student survey, the top three euthanasia topics of interest to the students were: talking with clients, techniques, and dealing with things that could go wrong (Cohen-Salter et al., 2004). However, veterinarians surveyed have indicated that their degree had not prepared them for euthanasia issues, and that their strategies have instead developed through clinical experiences (Dickinson et al., 2011; Hart et al., 1990; Tinga et al., 2001). Students attending a Canadian veterinary school rated themselves as neither comfortable, nor competent with euthanasia, and graduates were not comfortable carrying out euthanasia in the presence of a client (Tinga et al., 2001). There is a clear need and desire for additional euthanasia training and/or supervision of veterinarians (Cohen-Salter et al., 2004; Fogle & Abrahamson, 1992; Tinga et al., 2001).

A potential issue with some of these earlier studies is that they have relied on curriculum documents or information obtained from heads of school or department (e.g. Dickinson & Paul, 2014; Dickinson et al., 2010; Shivley et al., 2016). However, the accuracy of information gathered from curricula is questionable and department heads are not always aware of the details of what is

taught by their staff (Bath et al., 2004). Other researchers have surveyed students (Cohen-Salter et al., 2004) and/or practising veterinarians (Dickinson et al., 2014; Tinga et al., 2001) about how well their training equipped them for EoL management of animals. These studies did not focus on details of the training, but instead asked broad questions about its suitability for practice. The authors aimed to obtain a more accurate and detailed picture of what is being taught across Australasia by interviewing the staff actively teaching EoL management to veterinary science students, (Magalhaes-Sant'Ana et al., 2014).

The aim of this study was to describe how veterinary students are taught EoL management in Australasian veterinary schools. The specific aim of Part I reported here was to describe the teaching of technical euthanasia management. This section evaluated when in the degree teaching occurred, the euthanasia methods taught, and whether students were given a chance to practise these techniques before graduation.

4.3. Materials and methods

This research was the initial study towards the first author's doctoral degree aimed at exploring the role of veterinarians in EoL management of animals. Data were collected in structured interviews with educators (the 'participants') at all eight veterinary schools in Australasia (**Table 4.1**). The curricula years assessed were 2015/2016. The interview included questions concerning three aspects of EoL management: EoL decision-making; technical euthanasia; and grief management.

Questionnaire design

The structured interview was designed to answer the overall question ‘how are veterinary scientists being taught EoL management in New Zealand and Australian veterinary schools?’ There were six questions divided into three sections (EoL decision-making, Technical management, and Grief management). Each question was a combination of binary (yes/no) and open-ended questions.

Data from the ‘Technical Management of Euthanasia’ section are reported here. These data came from two questions: ‘Are undergraduate veterinary science students at your institution taught about the technical management of euthanasia in the following animal species?’. Participants were then asked for details of when in the veterinary programme any such material was taught, the duration of teaching, the euthanasia techniques taught, and whether students are given a chance to practise these techniques before graduation. The second question asked, ‘Are undergraduate veterinary science students at your institution taught how to kill the following animal species in an emergency situation and without the use of veterinary equipment?’. Question 2 was designed to elicit binary (yes/no) answers.

Demographic information recorded for each university included: number of participants interviewed, the gender and graduation year of each (highest degree), number of participants who taught relevant material for each category of animal, estimated total number of staff who taught veterinary science students, and average number of veterinary science students in each annual intake. Details of the

degree structure for each university were also recorded (**Table 4.1**). Year of graduation for each participant was subtracted from the curriculum year assessed in this study (2016) to give the number of years since graduation (**Figure 4.1**).

Table 4.1 Veterinary science degree structures at eight Australasian Universities

University	Pre-clinical year(s)*	Clinical year(s)*	Average annual student intake
Massey University	1 to 4	5	124
Melbourne University	1 to 3 [†]	4 [†]	120
The University of Queensland	1 to 3	4 to 5	120
Charles Sturt University	1 to 4	5 to 6	65
The University of Sydney [‡]	1 to 4	5	130
The University of Adelaide	1 to 3	4 to 6 [†]	65
James Cook University	1 to 3	4 to 5	110
Murdoch University [‡]	1 to 3	4 to 5 [†]	105

*Pre-clinical years were defined as predominantly theory-based teaching, while clinical years were defined as predominantly clinical/practical-based teaching by the individual representative at each university.

[†]Postgraduate years.

[‡]Universities that were converting from an undergraduate (BVSc) to a postgraduate degree (DVM) at the time of the study (2015/2016 curricula years).

Data collection

After development, the tool was used by the first author in November 2015 to interview participants at Massey University in New Zealand. Minor modifications were made to the interview procedure, but not to the questions, for example, the development of a shortened interview guide (**Appendix V**).

The finalised interview guide was then sent to a representative at each of the seven veterinary schools in Australia. The representatives chosen to carry out the interviews were academics involved in teaching animal welfare science or those who had special interests in animal welfare. All interviews were completed by January 2017. Recording devices were not used. Most interviews were conducted in person, except at Charles Sturt University, where phone interviews were used.

The teaching content was divided into four main categories of animals: (1) livestock: cattle, sheep/goats, deer, pigs, llamas/alpacas; (2) equine: horses, donkeys; (3) companion animals: cats, dogs, small mammals (e.g., guinea pigs, rabbits, rats); and (4) avian/wildlife animals: chickens/waterfowl, birds, mammals, reptiles, fish, other.

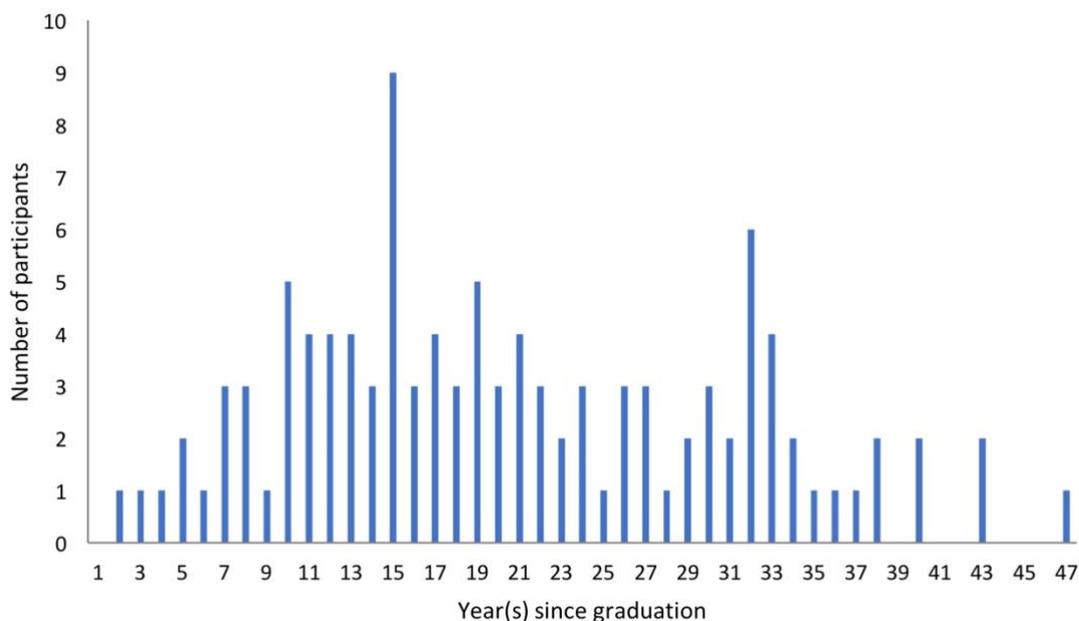


Figure 4.2 Frequency plot showing the year since graduation for 109 of 111 participants interviewed at eight Australasian Universities as of January 2016.

The representative at each university approached various participants identified as likely to teach relevant material. Thus, interviews were carried out with participants likely to teach areas related to: animal euthanasia, animal welfare, final year veterinary clinical rotations, veterinary ethics, and counselling or grief management. A snowball/chain sampling approach was used (Lyons, 2015; Magalhaes-Sant'Ana et al., 2014; Onwuegbuzie & Leech, 2005; Polkinghorne, 2005); each participant was asked to identify additional individuals for interview. Thus, the number of participants interviewed varied among schools.

During the interviews, representatives asked the questions given in the 'Quick Guide' (**Appendix V**) and recorded individual answers separately before collating the data and reporting the final results for that university in a tabular form.

Data analysis

The first author used categorical data from individual universities to construct tables in Microsoft Excel. Open-ended data were captured in Microsoft Word and later used as explanatory notes for variation in categorical data.

Data were analysed according to the following categories:

- For each of the four animal categories, representatives reported at which stage in the degree the material was taught, if at all. Information pertaining to university degree structure (**Table 4.1**) was used to assign this teaching to either pre-clinical or clinical teaching;

- A range of terms were used by representatives to describe specific methods of euthanasia. These were categorised by the first author based on common approaches. For example, terms such as firearm, free bullet, hand gun, rifle, and shoot were all categorised as ‘direct destruction by firearm’. Each euthanasia technique was assigned to a category according to Cooney et al. (2012) and the American Veterinary Medical Association Guidelines (Leary et al., 2013), with minor modifications;
- Answers to the question ‘Are students given a chance to practise these techniques before graduation?’ were categorised as yes/no. If reasons were given for this answer, they were used to sub-categorise these data;
- Whether students were taught how to kill each of the four categories of animals in an emergency and without the use of veterinary equipment was also categorised as yes/no. This meant there were four answers per university.

Frequency data were used to describe the number of schools that reported teaching technical skills for each animal category in preclinical or clinical years and whether students were given a chance to practise these techniques. A technique was counted once for each university in a category if one or more participants mentioned teaching it. Therefore, counts represent the range of techniques taught, rather than a count of the number of times mentioned. This was repeated for ‘chance to practise’ answers.

The project was evaluated by peer review and, according to criteria set by Massey University Human Ethics Committees (MUHEC), represented low risk to the participants, universities, and the veterinary community. Consequently, it was not reviewed by one of Massey University's Human Ethics Committees (MUHEC). Instead details of the project were notified to MUHEC with ethics notification number 4000015103.

4.4. Results

Demographics

The degree structures of eight veterinary schools are shown in **Table 4.1**. In three universities, the degree structure comprised four years of preclinical teaching following by one to two years clinical teaching. In the other five universities, there were three pre-clinical years followed by one to three clinical years. Student intake was used as a proxy for faculty size. Intake varied from 65 to 130, with two of the eight universities considered to have small class and faculty size (65 students/year) and four having large classes and faculty sizes (≥ 120 students).

CHAPTER 4: Technical euthanasia

Table 4.2 Demographic information for III participants interviewed at eight Australasian Universities

University	Total	Gender		Category of animal*				NA/all [†]
		M	F	Livestock	Equine	Comp	Avian /wildlife	
Massey University	28	15	13	8	4	7	6	3
Melbourne University	14	7	7	4	4	4	4	0
The University of Queensland	12	5	7	2	2	7	4	0
Charles Sturt University	8	4	4	4	3	4	3	2
The University of Sydney	13	6	7	4	4	3	2	1
The University of Adelaide	8	6	2	4	2	3	3	1
James Cook University	14	6	8	5	4	6	6	0
Murdoch University	14	6	8	3	3	6	5	0
TOTAL	111	55	56	34	26	40	33	7

*Participants were categorised as teaching relevant content for multiple categories of animal species if applicable. These values represent the numbers of participants answering affirmative to questions relating to this category of animal for each university.

[†]NA/all = psychologists, student counsellors, non-veterinary/specialist educators who did not identify with one animal category.

Participant numbers varied at each veterinary school (from 8 to 28), as did the number teaching relevant content relating to each category of animal (**Table 4.2**). There was no overall gender bias in participants and no overall bias in number of participants teaching relevant content to different animal categories. Of the 111 participants, 109 provided graduation information. The distribution of year since graduation for these participants is presented in **Figure 4.1**. Most participants graduated 10-35 years ago. Only three participants graduated over 40 years ago.

When technical euthanasia was taught to veterinary science students

Technical aspects of euthanasia were taught by all universities for all categories of animals. As there were eight universities, with four categories of animal for each, 32 possible opportunities for teaching existed. Euthanasia techniques were taught in 24 of the 32 (75%) possible opportunities in pre-clinical teaching. In contrast, it was taught in 29 of 32 (91%) possible instances of clinical teaching (**Table 4.1**).

For livestock, pre-clinical teaching of euthanasia techniques was reported at seven of eight universities. However, half of these instances included "...a two-hour handing practical in first year, which briefly discusses euthanasia..." Six universities taught these techniques in clinical years (**Table 4.3**).

The data for equine animals (**Table 4.3**), shows euthanasia techniques were taught in pre-clinical years at seven of the eight universities. Seven other universities also taught this in clinical years.

Table 4.3 Number (percentage) of eight representatives reporting some teaching of euthanasia techniques in pre-clinical and clinical years of the veterinary science degree at eight Australasia universities.

When taught	Category of animal			
	Livestock	Equine	Companion	Avian/wildlife
Pre-clinical year(s)*	7 (87.5)	7 (87.5)	4 (50)	6 (75)
Clinical years(s)*	6 (75)	7 (87.5)	8 (100)	8 (100)

*Defined for each university in **Table 4.1**

For companion animals, half of the eight universities taught euthanasia techniques in their pre-clinical years (**Table 4.3**). Those that did report this teaching, commonly made statements such as: "1 x 1 hour lecture...but this covers all species and is the only dedicated formal euthanasia teaching". All eight universities taught euthanasia techniques in clinical years for this category.

Six universities taught euthanasia techniques for avian/wildlife animals in preclinical years. Every university taught technical euthanasia for this category in clinical years. However, interpretation of this finding is challenging because clinical rotations for this category were often not compulsory. Therefore, student exposure to cases were likely to be variable.

In clinical years, all universities taught euthanasia for one or more categories of animal (**Table 4.3**). However, this was complicated by clinical teaching relying on "when opportunities present" or "if a case presents". One representative recorded "Informal in clinical rotations - not consistent as depends on if occurs when students on rotations". Another recorded "No didactic teaching; per case basis. On

ad hoc basis in clinics". Some representatives did not record estimates of teaching time and instead wrote "Clinical rotations, so difficult to say time frame and whether all [students] exposed".

Interpretation of the answers to the question of whether euthanasia techniques were taught for categories of animals was also complicated by the inclusion of certain species in the categories. All representatives answered 'yes' to the overall question for the category, but many added statements such as "Is taught for cattle, sheep and alpacas. Not for deer and pigs".

Euthanasia techniques taught

Sixty-five euthanasia techniques were mentioned by participants, but several represented different terms for the same technique, for example, 'firearm', 'hand gun', 'rifle', 'shoot', and 'free bullet' were all recategorised as 'firearm'. These were then categorised by how death was achieved resulting in 18 euthanasia techniques (**Table 4.4**). Of 576 possibilities (8 universities, with 4 categories of animal, and 18 euthanasia techniques), there were 124 recorded instances of their use. By category of animal, avian/wildlife represented most of these instances (49/124), followed by livestock (35/124). Of the three overarching categories, 'Depression of neurons necessary for life' was the most commonly taught category (71/124 instances), followed by 'Physical disruption of brain activity' (48/124 instances). 'Hypoxia' methods accounted for only 5/124 instances (Leary et al., 2013).

Table 4.4 Categorisation of euthanasia techniques taught by III participants interviewed at eight Australasian Universities.

Cause of death	Category of euthanasia technique	
Depression of neurons necessary for life		
Injectable agents	<i>Agent</i>	<i>Additional procedure</i>
	Intravenous (IV) barbiturate overdose	with or without adjunctive method(s) (e.g., sedation)
	Intrahepatic/renal/cardiac barbiturate overdose	with or without adjunctive method(s) (e.g., sedation)
	Intraperitoneal/coloemic barbiturate	with or without adjunctive method(s) (e.g., sedation)
	Intramuscular (IM) barbiturate overdose	No
	Other intravenous anaesthetic agents (e.g., somulose, alfaxalone)	with or without adjunctive method(s) (e.g., sedation)
Immersion/topical agents	Immersion in solution (e.g., barbiturate, MS-222, isoeugenol, Clove oil)	with or without adjunctive method(s)
Inhalational methods	Anaesthetic inhalants (e.g., isoflurane, halothane)	with or without adjunctive method(s) (e.g., barbiturate, pithing, exsanguination)
	Other gas inhalants (e.g., CO ₂)	No
Hypothermic shock	Ice water	No
Hypoxia		
Physical methods	Exsanguination	No
	Removal of gills	No
Chemical methods	Intravenous Magnesium Sulphate or Potassium Chloride	with or without adjunctive method(s)
Physical disruption of brain activity		
Concussive stunning	Blunt trauma	No
	Cervical dislocation/decapitation	No
Direct destruction	Firearm	No
	Captive bolt	with or without adjunctive method(s) (e.g., exsanguination, pithing)
	Pierce brain/pith	No
Depolarization of neurons	Electrical stunning	with or without adjunctive method(s)

Categories in the left column are based on Cooney et al. 2012 and the AVMA Guidelines 2013. Categories in the middle and right columns have been constructed using the data from this study and represent how death was achieved.

Injectable agents made up most of the first ‘Depression of neurons’ category (46/71). Seven of the eight universities reported teaching intravenous barbiturate overdose for companion animal euthanasia, either with or without sedation. The eighth university did not record details for this category, therefore 100% of universities that recorded details of companion animal euthanasia techniques reported teaching this technique to students. All eight universities reported

teaching this technique for livestock and equines. For avian/wildlife species, six universities taught intravenous barbiturate euthanasia.

Three techniques in the 'Depressions of neurons' category were restricted to avian/wildlife animal teaching: intramuscular barbiturate overdose, immersion in solution, and ice water. For example, "Fish are sedated in water (immersion anaesthesia) with either MS-222 or isoeugenol, finish with intracoelomic or intracardiac injection with or without pithing (if not going back to owner)."

Physical disruption of the brain was not taught for companion animals. Thirty-five of these 48 physical disruption techniques were using methods that directly destroy the brain tissue (e.g., firearm, captive bolt, piercing the brain).

Direct destruction methods were commonly taught for livestock and equine categories, whereas direct destruction and concussive stunning were taught equally often for the avian/wildlife category.

- For livestock, firearm was taught by seven universities, and captive bolt by all eight, whereas blunt trauma was taught by only two universities as a recommended euthanasia method for this category of animal, and one university taught electrical stunning.
- For equine, only direct destruction was taught, with seven universities reporting teaching firearm use, and six captive bolt.

- For avian/wildlife; concussive stunning (blunt trauma 2/8; cervical dislocation 7/8) was also taught, and direct destruction was rarely taught (captive bolt at 1/8 universities, piercing the brain at 4/8). Electrical stunning was taught at one university for use in avian/wildlife animals. However, it should be noted that one university taught students not to use blunt trauma or cervical dislocation in avian/wildlife animals: “participant does not typically advocate other techniques e.g. neck snap or head crush”.

Euthanasia by hypoxia was divided into physical and chemical methods. The former was only taught for livestock and avian/wildlife, while the only chemical method taught was the use of intravenous Magnesium Sulphate or Potassium Chloride for livestock at one university (**Table 4.4**). Another university taught students not to use this technique in livestock: “...also discusses non-humane techniques: throat-cut in calves, intravenous magnesium sulphate”. Exsanguination with no prior stunning was taught by three universities for livestock, and removal of gills in fish was taught as a method at one university. However, several universities taught the use of exsanguination as an 'adjunctive' method after a primary method had rendered the animal unconscious, for example, captive bolt, firearm. Because the primary method was the one to induce unconsciousness, and thus of primary concern for the animal's welfare, these techniques were recorded under their primary method.

Five methods were taught to students as 'inhumane' across all universities. For livestock, these methods were: exsanguination only and intravenous magnesium sulphate or potassium chloride administration without an adjunctive method (e.g., general anaesthesia). The methods for avian/wildlife were: intrahepatic/renal/cardiac barbiturate overdose without adjunctive method, intraperitoneal/coelomic barbiturate overdose without adjunctive method, and cervical dislocation. However, in nearly all cases of a method being taught as inhumane, another participant interviewed at the same university recommended and taught this method.

Chance to practise before graduation

Responses to this question were categorised (**Table 4.5**) and of the 100 responses, 58 stated that students were given an opportunity to practise euthanasia techniques before graduation while 42 responses said 'no'. By university (**Table 4.6**), most opportunities were given to practise these techniques for companion and avian/wildlife categories of animals. Less universities gave students this opportunity for livestock and equine categories. However, when opportunities not given (an overall answer of 'no') were examined, companion and avian/wildlife categories were again higher.

The use of conscious animals was the most common (34/100) way this was taught. Euthanasia of a hospitalised animal without the owner present (15/34) or practising related skills, for example, catheter placement (12/34) was used more frequently

than euthanasia being performed in a practical/laboratory session (4/34). Three universities gave students an opportunity to practise euthanasia during a consultation for client-owned animals and these were all for livestock. Livestock and avian/wildlife (2/34 responses each) were the only categories where students could practise euthanasia during structured practical or laboratory sessions.

Of the 42 responses representing no opportunity for students to practise euthanasia techniques, 16 gave no details and simply answered 'no'. Ten of these were dictated by the situation, five due to student safety concerns, nine involved students observing euthanasia, and two used post-euthanasia discussions instead. Of the ten reasons for the situation dictating, half of these were represented by the owner being present in the companion animal category, while this was not a reason for livestock. Student safety concerns were limited to livestock and equine categories.

Emergency euthanasia

Of the eight universities, five taught emergency euthanasia in livestock, two in equids, zero for companion animals, and eight for the avian/wildlife category.

Table 4.5 Categorisation of opportunity for euthanasia practise facilitated by 100 participants interviewed at eight Australasian Universities over all animal categories.

Are students given a chance to practise these techniques before graduation? i.e., perform euthanasia	
YES	
Details not given	
Conscious animals used	Euthanasia in practical/laboratory session
	Euthanasia during consultation with owner
	Euthanasia of hospitalised animal or without owner present
Practise related skills e.g., catheter placement, blood draw, intravenous injection	
Anaesthetised animals used	Euthanasia of anaesthetised animal
	Practise related skills e.g., catheter placement, blood draw, intravenous injection
Cadavar animals used	Practise euthanasia technique
	Practise related skills e.g., catheter placement, blood draw
No animals used	Role play
	Practise euthanasia technique
	Practise related skills e.g., catheter placement, blood draw
NO	
Details not given	
Situation dictates	Owner present
	Owners requests veterinarian only
Student safety concerns	Dangerous animal or conditions
	Mental impact on student
Observation	Watch video of euthanasia
	Observe euthanasia during consultation
	Observe euthanasia during placement
Discussion	Discuss case with students

The right column represents explanatory details resulting from this question, these have been further categorised into the overarching categories on the left.

Table 4.6 Number (percentage) of representatives reporting students are given a chance to practise euthanasia techniques in the veterinary science degree at eight Australasia universities.

Chance to practise	Category of animal			
	Livestock	Equine	Companion	Avian/wildlife
Yes	6 (75)	5 (62.5)	7 (87.5)	8 (100)
No	5 (62.5)	7 (87.5)	7 (87.5)	8 (100)

The chance to practise is defined further in **Table 4.5**

4.5. Discussion

This study used structured interviews with educators at eight universities in Australasia to explore how the technical management of euthanasia was taught to veterinary students in 2016. Questions explored when euthanasia techniques were taught in the curricula, which techniques were taught for each of four animal categories, and whether students had opportunities to practise these techniques before graduation.

Simply raising the issue has had an immediate effect; many representatives reported that the interview process had invited discussion about the current curriculum and how well it prepared students for EoL management in clinical practice. Subsequent feedback to heads of schools resulted in increased EoL teaching in some participating universities. The Euthanasia Guidelines designed by the AVMA (Leary et al., 2013), and Cooney's book (Cooney et al., 2012), are useful resources for this teaching. However, as was found in this study, there is some disagreement about whether recommended techniques are still considered humane. Ongoing research into euthanasia techniques and their associated affective experiences (Beausoleil & Mellor, 2015) is likely to change our understanding of their welfare impacts and require updates to this list in the future.

When in the veterinary curricula euthanasia techniques were taught to students

The findings suggest that euthanasia techniques were taught in clinical years as often as, or more often than, in preclinical teaching, although there was some variation within animal categories. For two universities, techniques for livestock were taught in preclinical years only. It is unclear why this variation in timing of teaching euthanasia techniques existed, but a number of authors (Dickinson & Paul, 2014; Rollin, 2006) have drawn attention to the benefits of spreading this kind of teaching throughout the degree.

Interestingly, clinical teaching often relied on opportunities for relevant teaching arising. This was unlikely to have occurred consistently for all students. For example, euthanasia teaching of relevant material might occur before or after euthanasia consultations if the teaching clinician was comfortable allowing students to observe or participate. The implication for new graduates, of this variable exposure to end-of-life teaching, is that most do not feel comfortable carrying out euthanasia in the presence of a client (Tinga et al., 2001). However, exposure to euthanasia techniques at external veterinary placements was not accounted for in this study.

Preclinical and clinical teaching were analysed separately as there were different levels of exposure and teaching styles associated with each. Teaching in clinical years was typically case-based and therefore limited by student exposure to

relevant clinical cases. In contrast, preclinical teaching tended to be theoretical and/or used practical/laboratory sessions where the entire year-group was exposed to the lessons (Ryan et al., 2004; Walsh et al., 2001). Each has its limitations, but the inclusion of both is likely to be beneficial (Dickinson & Paul, 2014; Rollin, 2006).

The degree structure of the university is likely to have factored into when this was taught. Three universities had four years of preclinical teaching, while the other five degree structures had three preclinical years. This was then followed by a variable number of clinical years ranging from 1 to 3. Therefore, if a university with only one clinical year relied on all euthanasia teaching in this year it is likely this teaching will have been more limited than a university offering 'clinical-only' euthanasia teaching in a three-year clinical degree structure.

The data reported here could overestimate opportunities to practise before graduation because the responses were university-based, that is, a certain method was taught, or an opportunity to practise provided, at least once at a university. It cannot be said how commonly these techniques were taught, but this could be the subject of future research. Inconsistent opportunities to practise techniques is problematic to both students and the veterinary profession.

Another issue was with how representatives classified their preclinical and clinical years. If the entire postgraduate degree was classified as clinical and interviews

were limited to those that taught this degree, and not the earlier 'pre-vet' undergraduate degree, this university will have recorded only clinical teaching for euthanasia techniques.

By only interviewing a subset of academics and teaching staff there is a chance that some areas were being taught by an individual that was not interviewed. However, this is unlikely as: (1) participants offered information of other areas they thought it 'might' be taught and; (2) they were asked to recommend other potential participants to interview. There were often reports given of "I'm sure [colleague] teaches that", but when said colleague was interviewed they were under the impression that someone else taught it.

Euthanasia techniques taught to veterinary students

Overall, the fewest euthanasia techniques taught were for companion and equine animals. The most variation in techniques taught were for avian/wildlife, followed by livestock. Depression of neurons was the most common category taught by far, and this was predominantly using injectable agents. Direct destruction of brain tissue accounted for nearly 75% of techniques that caused physical disruption of the brain.

The techniques taught for companion animal euthanasia were only those that caused death via neuronal depression (injectable or inhalational agents). For equine species, only injectable agents (e.g., barbiturate) and direct destruction

(firearm or captive bolt) methods were taught. Livestock and avian/wildlife were the only categories where hypoxic causes of death were taught. The advantage of teaching one, versus a variety of, euthanasia techniques for each species of animal is debateable. Performing one technique well could lead to confidence in approach, but conversely does not allow for adaptations to the situation (Cooney et al., 2012).

Interestingly, there appeared to be some disagreement among universities regarding the humaneness of some techniques (e.g., the use of intravenous magnesium sulphate in livestock, and blunt trauma or cervical dislocation in birds), with some universities teaching them as acceptable while others specifically indicated their unsuitability. However, our data were not sufficiently detailed to clearly understand these differences. For example, the question asked what was taught, not specifically whether a particular method was taught as a 'recommended' technique. One justification for this disagreement could be that techniques varied with how an animal was perceived by the educator. The welfare implications of (potentially) inhumane techniques being taught to veterinary students is they may be used inappropriately in clinical practice. Veterinary education establishments have an important role in setting the standards for graduates to follow (Anonymous, n.d.).

Emergency euthanasia (i.e., killing without the use of veterinary equipment) was taught by all eight universities for avian/wildlife, but at variable frequency for the other categories. This is perhaps because avian/wildlife species are routinely killed

by non-veterinarians in 'field situations' (Leary et al., 2013), whereas the other categories of animal tend to be killed by veterinarians or skilled animal-carers (e.g., farmers, home-kill operators). Therefore, the need for veterinarians to be taught how to kill these latter categories, without the use of their equipment, is limited.

Opportunities given for veterinary students to practise euthanasia techniques before graduation

Only three universities gave students a chance to practise euthanasia during a consultation for client-owned animals and these were all for livestock. Students were allowed to practise euthanasia during practical sessions only for livestock and avian/wildlife. One explanation for this difference relates to the perception of these animals and the role of the human-animal bond (Gardiner, 2014; Payne et al., 2015). Livestock are widely regarded as production animals (Fraser, 2008; Rollin, 1995; Stafford, 2013) and consequently students are taught about their production worth, and killing is normalised for these species. This can be compared with companion and pet animals (e.g., equine, companion, and some avian/wildlife categories), where death and killing are rarely discussed in a routine or solely 'practical' manner (Sandøe & Christiansen, 2008; Sandøe et al., 2016). The value of herd-animals versus individual-animals may have also impacted on these choices (Benson & Rollin, 2004; Harrison, 1964). The discussion of death in companion animals also focuses on human concerns, such as grief and problematic decision-making (Knesl et al., 2017; Yeates, 2013). How participants define euthanasia may have also affected their answers. Killing using a humane method, including animal

slaughter, is unlike the supposition that killing be in the animal's best interests (Leary et al., 2013).

The individual animal species in each category for whom euthanasia was taught was also reliant on what the veterinary school had access to, what species they envisaged their graduates required knowledge of, and/or what animal species tended to predominate in the area. For example, one University reported that "*deer are not farmed commonly in [area]*" and "*few sheep are kept at [university]...*"

The results of structured interviews with participants were summarised by the representative at each university before being analysed by the main author. A degree of analysis will have been conducted by different representatives while completing the questionnaire. Another issue with summarising findings from many interviews was how to record quantifiable data. For example, if one clinician allowed students to practise euthanasia, but the rest did not. This could have resulted in a 'yes' being recorded when it may only represent ten students having had the chance to practise with one clinician. This may also be the case for preclinical practicals. To reduce the number of animals used in teaching (Russell & Burch, 1959), one student per group may perform the euthanasia in these practical classes.

There was also potential for response bias to occur if participants were under the impression that it was socially or professionally desirable for them to be teaching

areas they were asked about (Nederhof, 1985). This study relied on participant's giving frank answers to potentially leading questions.

Veterinary competency

EoL management relies on competency in a range of skill areas, some of which can be taught in a formal setting (e.g., euthanasia methods), while others rely on practical skills (e.g., catheter placement) that require 'hands-on' learning (Norman, 2016). The Veterinary Council of New Zealand (VCNZ) considers a competent veterinarian to be one who "applies knowledge, skills, attitudes, communication and judgement to the delivery of appropriate veterinary services in accordance with their field of veterinary practice" (Anonymous, n.d., p. 1). Veterinary competency tends to result from taught knowledge and workplace-based learning; it is taught and learnt 'on the job' (Magnier et al., 2011; Norman, 2016).

This study illustrates how Australasian veterinary schools are contributing to the formally taught knowledge component of competency in technical euthanasia. A challenge for these education providers is a lack of consistency in providing opportunities for students to practice these skills, a core factor in developing competency. This inconsistency was particularly evident in the clinical years of the veterinary schools involved in this study, where the frequency with which students were taught euthanasia techniques, or given opportunities to practice them, varied considerably within a university. The information generated by this study informs our understanding of aspects of pedagogy relating to the development of veterinary competency in technical EoL management.

The VCNZ has eight ‘minimum’ competency standards and performance indicators for veterinarians based on the graduating competencies of Massey University’s Bachelor of Veterinary Science students (Anonymous, n.d.). Of particular relevance to this research is the fifth standard, which includes the statement: “Evaluates the need for euthanasia and when required carries it out safely and humanely, with the informed consent of the owner (where known) and using procedures appropriate for the species concerned and the circumstances” (Anonymous, n.d., p. 3). The Royal College of Veterinary Surgeons (RCVS) ‘Year One Competencies’ includes a section on euthanasia where ‘performing euthanasia; techniques and their context’, is listed alongside ‘client management’ (Anonymous, 2016a; Main et al., 2005).

Future implications

This study provides a clear overview of the potential gaps and contradictions in current Australasian veterinary training. These findings have important implications for veterinary curricula and competency of new graduates, as well as the welfare of the animals they treat and the wellbeing of the clients they serve. This study has explored veterinary experiences of euthanasia techniques (i.e., opportunities to practise techniques), but future studies could directly examine links between this and competency in new graduates. Do veterinarians tend to use the techniques taught during their training? Do they avoid techniques they are

taught are inhumane? Are there differences in veterinary competency between animal categories and/or techniques?

The impact of different regulatory structures on the teaching of EoL management could be an interesting topic for future research. If there is true variation between euthanasia techniques being taught in schools, it may reflect differences in animal welfare legislation between countries or territories.

Another aspect to consider is whether what is reportedly taught is the same as what is being learnt by students. Students are increasingly concentrating their learning towards what they need for assessment, or the 'hidden curriculum' (Gibbs & Simpson, 2005; Sambell & McDowell, 1998). Examining the assessment of EoL management, and particularly euthanasia techniques, may be more informative. Conversely, if EoL management is not assessed in the veterinary curriculum, would implementing assessments and providing feedback on student performance improve learning? (Wilson & Scalise, 2006) Embedded assessments should be encouraged – where a task is aligned to a learning activity (Wilson & Scalise, 2006; Wilson & Sloane, 2000). It is believed the hidden curriculum still exists in Professional degrees (Hafferty, 1998; Mossop et al., 2013), such as veterinary medicine (Larkin, 2017), where student learning is encouraged not for grades, but for professional competency. On the one hand, students should be learning skills they will require as a clinical veterinarian, but on the other, they are in a

programme for three to five years where the emphasis is on assessment and grades being awarded.

4.6. References

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CHAPTER 5: Decision-making teaching



How decision-making about euthanasia for animals is taught to Australasian veterinary students

The material presented in this chapter has been published:

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Results are presented in the style of the journal, and some of the Methods section is similar to that of **Chapter 3**.

5.1. Abstract

This study set out to explore how euthanasia decision-making for animals was taught to students in eight Australasian veterinary schools. A questionnaire-style interview guide was used by a representative at each university to interview educators. Educators were interviewed about their teaching of euthanasia decision-making for four categories of animals: livestock, equine, companion, and avian/wildlife. Using thematic analysis, the terms provided by participants to describe how (mode of teaching), and what (specific content) they taught to students were categorised. Information about content was categorised into human-centred *factors* that influence decision-making, and animal-based *indicators* used to directly inform decision-making. All eight representatives reported some teaching relevant to euthanasia decision-making at their university for livestock, companion animal, and avian/wildlife. One representative reported no such teaching for equid animals at their university. Observation of a euthanasia case was rarely reported as a teaching method. Five universities reported multiple modes of teaching relevant information, while two universities made use of modalities that could be described as opportunistic teaching (e.g., ‘Discussion of clinical cases’). Factors taught at most universities included: financial considerations, and that it is the owner’s decision to make. While animal-based indicators taught included: QoL/animal welfare, prognosis, and behaviour change. Overall, most universities used a variety of methods to cover relevant material, usually including lectures and several other approaches for all animal types.

However, because two universities relied on presentation of clinical cases, not all students at these veterinary schools will be exposed to make, or assist in making, euthanasia decisions.

5.2. Introduction

Veterinarians play a vital role in maintaining the quality of their patients' lives, minimising suffering, and promoting wellbeing (Hewson, 2003; Morton, 2010; Yeates, 2012). An important part of this role is managing the period leading up to an animal's death (Morris, 2012; Persson, Selter, Neitzke, & Kunzmann, 2020; Yeates, 2013). Thus, decisions about how the end of animals' lives should be managed are an important aspect to safeguarding animal welfare.

Veterinary medicine, in contrast to the majority of human medicine practice, allows for, and often encourages, euthanasia as an option for end-of-life (EoL) management (Leary et al., 2020). The definition of euthanasia typically encompasses both the application of a technique which minimises suffering (i.e., is humane) and killing being performed for the animal's benefit i.e., for reasons related to welfare or quality of life (QoL) (Leary et al., 2020; Persson et al., 2020).

The process of euthanasia decision-making is a component of EoL management and often involves the veterinarian, in consultation with the animal's owner. Decision-making includes considering indicators of the animal's welfare or QoL (Tinga, Adams, Bonnett, & Ribble, 2001). Decisions are also influenced by other

factors such as the owner's financial, time and other resources, and their attachment to the animal (Goldberg, 2016; Kemp, Jacobs, & Stewart, 2016; Tannenbaum, 1993). Likewise, the type of animal and its use may influence the decision-making process. For example, the decision to end the life of livestock may be strongly influenced by financial/economic or production factors at the group level e.g., dairy cattle at the end of their productive lives (Sandøe, Corr, & Palmer, 2016). In contrast, euthanasia decisions for companion animals are likely to be linked to the owner's personal circumstances and affection for the individual animal, as well as a range of other factors (Sandøe et al., 2016). In some cases, there may be conflicts between the quality and duration of an animal's life, and the needs of the animal versus those of the owner (Knesl et al., 2017; Sandøe et al., 2016) or their veterinarian (Grimm et al., 2018). Taken together, these factors make euthanasia decision-making a particularly challenging feature of veterinary practice (Matte, Khosa, Coe, & Meehan, 2019; Shaw & Lagoni, 2007).

Veterinary education in euthanasia decision-making is important for animals, client, and veterinarians and students benefit from having decision-making skills included in their veterinary degree (Magalhaes-Sant'Ana, 2014; Magalhaes-Sant'Ana, Lassen, Millar, Sandoe, & Olsson, 2014; Morton et al., 2013). During their training, there are opportunities for veterinary students to develop the skills necessary to explore euthanasia decision-making options with future clients. For the veterinarian, workplace satisfaction results from carrying out a job well and engenders a sense of professional pride (Wright & Bonett, 2007), which in turn is

important for personal wellbeing (Black, Winefield, & Chur-Hansen, 2011; Cake et al., 2016; Matte et al., 2019).

There is limited guidance available regarding how euthanasia decision-making should be taught to veterinary students. Instead, curricula are developed by individual veterinary schools and tend to be dictated by accreditation requirements. New Zealand's only veterinary school, and several of Australia's, must teach to standards set by The American Veterinary Medical Association Council on Education®, the Royal College of Veterinary Surgeons, and the Australasian Veterinary Boards Council Inc. in order to maintain accreditation (Anonymous, 2020a,b; Anonymous, 2021). This ensures that graduates of these schools are sufficiently competent to practice in the United States, the United Kingdom, and/or Australasia respectively. Their guidelines list expected competencies or attributes of newly graduated veterinarians. The Royal College of Veterinary Surgeons 'Year One Competencies' include a section on euthanasia in which 'performing euthanasia; techniques and their context', is listed alongside 'client management' (Anonymous, 2016; Main et al., 2005). The purpose of such standards is to ensure that there is a direct link between what is taught in veterinary schools and what is expected of practising veterinarians. If euthanasia decision-making is a key competency, or role, for veterinarians then it follows that it will be taught in the curriculum of Australasian veterinary schools.

Few studies have explored how veterinary competency in EoL management is taught to veterinary students, and none have done so for Australasian veterinary schools. Our research indicates that EoL teaching varies by the extent of this teaching and when in the veterinary curriculum it occurs (Littlewood et al., 2018; Littlewood et al., 2020). Group discussions, scattered across courses and on clinical rotations, were the teaching method of choice in the UK (Dickinson et al., 2014). In contrast, in the USA, EoL management was taught as a set module within a course or was offered separately (Dickinson et al., 2010). An informal survey designed by veterinary students at Tufts University found that 24 of the 30 North American veterinary colleges taught euthanasia more commonly during clinical rotations. Ethics, oncology, and pharmacology courses were the next most common curriculum locations for euthanasia teaching in the veterinary colleges surveyed (Cohen-Salter et al., 2004).

The details of what is taught in EoL veterinary curricula also vary. Three topics were consistently taught across these six UK veterinary schools: communication with owners of dying animals, euthanasia, and analgesics for chronic pain. In the informal Tufts veterinary student survey, the top three euthanasia topics of interest to the students were: talking with clients, techniques, and dealing with things that could go wrong (Cohen-Salter et al., 2004).

A potential issue with some of these earlier studies is that they have relied on curriculum documents or information obtained from heads of school or

department (e.g., Dickinson et al., 2010; Dickinson et al., 2014; Shivley et al., 2016). The reliability of curriculum mapping is questionable, and heads of department are not always aware of the details of what is taught by their staff (Bath et al., 2004). By interviewing the staff actively teaching EoL management to Australasian veterinary students, our research aims to obtain a more detailed picture of what they are being taught (Charles et al., 1997; Magalhaes-Sant'Ana et al., 2014). It is our understanding that no one has investigated how the process of euthanasia decision-making is specifically taught in veterinary schools.

To begin to bridge the gaps in existing knowledge, an inductive methodology using interviews, was used in this research. This represents one part in an overarching exploratory study that sought to describe how aspects of EoL management were taught to veterinary students in all eight Australasian veterinary schools (**Table 5.1**). Previously we have described how technical management of euthanasia was taught. We found that euthanasia techniques were taught at more universities in the later years of the degree than in earlier years. The results highlighted the importance of veterinary competency in the technical skills necessary to perform animal euthanasia (Littlewood et al., 2018). The aim of the current part of the study was to explore how the process of euthanasia decision-making was taught to these students. In particular, to identify how any such material was taught (e.g., via lecture or during clinical rounds) and whether a formal QoL or welfare assessment tool was taught or used in the university's veterinary hospital. In addition, we

undertake a preliminary qualitative exploration of the content of teaching relating to euthanasia decision-making.

Table 5.1 Number of students and interview participants at eight Australasian Universities.

University	Average annual student intake	Number of participants
Massey University	124	28
Melbourne University	120	14
The University of Queensland	120	12
Charles Sturt University	65	8
The University of Sydney	130	13
The University of Adelaide	65	8
James Cook University	110	14
Murdoch University	105	8

5.3. Materials and Methods

The project was evaluated by peer review and, according to criteria set by Massey University Human Ethics Committees, judged to represent low risk to the participants, universities, and the veterinary community. Consequently, it was not reviewed by one of the Committees. Instead details of the project were notified to the committee (notification number 4000015103).

Data collection

Data were collected in structured interviews with educators (the ‘participants’) at all eight veterinary schools in Australasia (**Table 5.1**). The curricula years assessed

were 2015/2016. For full details of the data collection process, see Littlewood et al. (2018). Briefly, a questionnaire was developed and first used to interview participants at Massey University in New Zealand. A shortened interview guide was developed during this process ('Quick Guide'). This interview guide was sent to a representative at each of the seven veterinary schools in Australia. The representatives chosen to carry out the interviews with participants were academics involved in teaching animal welfare science or those who had special interests in animal welfare. All interviews were completed by January 2017.

The representative at each university approached various participants identified as likely to teach relevant material. Thus, interviews were carried out with participants likely to teach areas related to any of: animal euthanasia, animal welfare, final year veterinary clinical rotations, veterinary ethics, and counselling or grief management. A snowball/chain sampling approach was used (Lyons, 2015; Magalhaes-Sant'Ana et al., 2014; Onwuegbuzie & Leech, 2005; Polkinghorne, 2005); each participant was asked to identify additional individuals for interview. Thus, the number of participants interviewed varied among universities.

During the interviews, representatives asked the questions provided in the interview guide (see Littlewood et al. (2018)) and recorded participants' answers in the spaces of this guide before collating the data and reporting the final results for that university in tabular form.

Questions about the teaching, mode, and content were divided into four main categories of animals: (1) livestock: cattle, sheep/goats, deer, pigs, llamas/alpacas; (2) equine: horses, donkeys; (3) companion animals: cats, dogs, small mammals (e.g., guinea pigs, rabbits, rats); and (4) avian/wildlife animals: chickens/waterfowl, birds, mammals, reptiles, fish, other. These categories reflect divisions in teaching in the pilot veterinary school (Massey University) and many of the other veterinary schools studied.

Questionnaire design

Full details of the questionnaire design and implementation are given in Littlewood et al. (2018). There were six questions divided into three sections (Euthanasia decision-making, Technical management, and Grief management). Each question was a combination of binary (yes/no) and open-ended components. The structured guide focused our exploration to only certain aspects of the topic that we believed would be important. As such, we explored how teaching modality and animal type might influence teaching about euthanasia.

Data about euthanasia decision-making came from two questions. First, participants were asked: 'Do you teach undergraduate veterinary science students how to make decisions about whether or not an animal, in any of the following broad categories, should be euthanased?' If the answer was yes, they were asked to provide details of how any such material was taught (teaching mode), whether a formal assessment tool was taught for making euthanasia decisions, and, if a formal

tool was not used, what was taught (including any clinical indicators that might be used to make euthanasia decisions). The second question asked, 'In your veterinary school's clinical practice/hospital, is there a standard in-house protocol OR formal tool for the assessment of animal welfare status OR quality-of-life in the following broad groups of animal species?'.

Information, reported by the representatives, about each university included: details of the degree structure, number of participants interviewed, the gender and graduation year of each participant (highest degree), and average number of veterinary science students in each annual intake (as a proxy for faculty or school size).

Data analysis

Social science researchers recognise that they are an active participant in the research they carry out. In other words, the researcher has a role in producing the data. The questions asked, study design, and methods of analysis chosen all result from the particular lens or perspective through which the researcher views the world. The rigour of social science research is demonstrated when the researcher is able to describe the rationale for the research. This allows the reader to understand where the data have developed from, that is, how studies were designed, and what this data means in the context of other research in the field (Moon & Blackman, 2014).

The first author is a small animal veterinarian and lecturer at Massey University. The study was developed as a result of her being asked to teach veterinary students about grief associated with animal euthanasia. She was interested in where else euthanasia topics were being taught in the veterinary curriculum, and along with her PhD supervisors, developed a study to explore this teaching in Australasian veterinary schools. The representatives who conducted the interviews at the Australian veterinary schools also had interests in animal welfare or related disciplines. Because of this background, the authors had an active role in producing the qualitative data. In particular, the researcher's lens is an acknowledged feature of both study design and theme development from the qualitative data.

Information reported by each university representative regarding teaching modalities was summarised within each animal category. If at least one participant reported teaching relevant material using a teaching modality for an animal category, the university was scored as 1.

Open-ended answers were categorised by the first author based on common themes using inductive thematic analysis i.e., the themes were driven by the data (Braun & Clarke, 2006). For example, terms such as 'welfare improvements', 'enjoying everyday activities', 'signs of enjoying life', 'animal still doing 10 favourite things', and 'willingness to live' were all categorised as 'Animal welfare or quality of life'.

Answers to the question about welfare/QoL protocols or tools in the university's clinic were categorised as yes/no. If reasons were given for this answer, they were used to further explore what was used.

5.4. Results

Demographics

One hundred and eleven participants were interviewed in eight veterinary schools. Participant numbers varied from 8 to 28 at each veterinary school (**Table 5.1**). There was no overall gender bias (56 females; 55 males) in participants and no overall bias in the number of participants teaching content relevant to different animal categories (see Littlewood et al. 2018)).

Teaching modality for euthanasia decision-making

All eight representatives reported some teaching at their university relevant to euthanasia decision-making for Livestock, Companion Animal, and Avian/Wildlife categories. One representative reported no such teaching for Equid animals.

For universities reporting teaching euthanasia decision-making for an animal category at least once in the degree, **Table 5.2** shows the modalities of that teaching. 'Discussion of clinical cases' was the most commonly reported teaching modality, occurring in at least six universities in each animal category. Relevant material was also commonly taught via lecture (at least five universities in each

animal category) or via tutorial or practical teaching (at least four universities in each animal category). The use of self-directed learning, general or informal discussion, or observation of euthanasia teaching modes were rarely reported. The only exception being the modality 'General discussion or informally', which was used more often for the companion animal category than others. When used, this modality was always used in addition to another modality at the same university. Reasons given for not having students observe euthanasia included the need to protect students from a stressful situation or to protect client privacy. The reluctance of participants to have students present during a euthanasia consultation is illustrated in this quote relating to teaching companion animal euthanasia:

"I don't want students around when I am talking to the client about euthanasia for the first time."

When reported, this modality occurred together with 'Discussion of clinical cases' at each university.

Five Universities (A, B, C, D, F) consistently reported multiple modes of teaching relevant information. In all cases, lectures and discussion of clinical cases were used. Universities A to C, and F used fairly consistent teaching modalities for all animal types and used multiple modalities (**Table 5.2**). University D used fewer modes for livestock and equids, but always used a lecture and at least some other modality.

Table 5.2 Number of representatives reporting various modalities used for teaching euthanasia decision-making to students in the veterinary science degree at eight Australasian universities.

LIVESTOCK	University								
	A	B	C	D	E	F	G	H	OVERALL
Teaching modality*									
Lecture	1	1	1	1		1			5
Tutorial or Practical	1	1	1			1	1	1	6
General discussion or informally			1						1
Discussion of clinical cases	1	1	1	1	1	1		1	7
Observe euthanasia						1			1
Self-directed learning	1		1			1			3

EQUINE	University								
	A	B	C	D	E	F	G	H	OVERALL
Teaching modality									
Lecture	1	1	1	1		1		1	6
Tutorial or Practical	1	1	1					1	4
General discussion or informally			1					1	2
Discussion of clinical cases	1	1	1	1	1	1			6
Observe euthanasia									0
Self-directed learning	1								1

COMPANION	University								
	A	B	C	D	E	F	G	H	OVERALL
Teaching modality									
Lecture	1	1	1	1		1			5
Tutorial or Practical	1	1		1		1			4
General discussion or informally			1	1		1	1	1	5
Discussion of clinical cases	1	1	1	1	1	1		1	7
Observe euthanasia					1				1
Self-directed learning	1	1		1					3

AVIAN/WILDLIFE	University								
	A	B	C	D	E	F	G	H	OVERALL
Teaching modality									
Lecture	1	1	1	1		1		1	6
Tutorial or Practical	1	1		1		1			4
General discussion or informally									0
Discussion of clinical cases	1	1	1	1	1	1	1		7
Observe euthanasia			1						1
Self-directed learning	1								1

*Example comments from representatives:

Lecture: During lecture, Seminar;

Tutorial or Practical: Tutorial, Workshop, Practical;

General discussion or informally: Group discussion, Informal;

Discussion of clinical cases: During clinical rotation, Case discussion, During rounds;

Observe euthanasia: Observe euthanasia, During euthanasia consult;

Self-directed learning: Online material, Self-directed learning, Student presentations.

Three Universities (E, G, H) used only one or two modes for most animal types and those modes varied with animal type. Universities E and G made use of limited modalities and these could be described as opportunistic teaching (e.g. 'Discussion of clinical cases' and 'Observe euthanasia').

Thematic analysis of teaching content: Human-centred factors influencing euthanasia decision-making and Animal-based indicators informing euthanasia decisions

Table 5.3 shows the results of the thematic analysis of the qualitative data on the content of teaching euthanasia decision-making. Themes have been collated into two overarching categories relating to human-centred *factors* that may influence decision-making and animal-based *indicators* used by veterinarians to inform decision-making.

Human-centred factors influencing decision-making

There were ten themes of taught material relating to teaching of factors that may influence euthanasia decision-making (**Table 5.3**). These were divided into three over-arching categories: owner; vet; and animal factors. Owner and animal factors were taught at more universities than vet factors (**Table 5.4**). Financial considerations and owner decisions were taught at most universities. An example of an owner factor reported for Livestock:

“Factors always considered: how much does it cost to treat? (is it worth it financially)...”

One participant summarised the influence of ‘type’ of wild/avian animal well when they discussed the difference between euthanasia decisions for owned pet versus wild birds:

“Prognosis also changes if owned compared to wildlife as for wildlife the decision [of whether it] can it be released back into its habitat [is important].”

The human-animal relationship and veterinary experience were almost never taught as a factor influencing decision-making.

Animal-based indicators taught to inform decision-making

Overall, animal-based indicators to *inform* decision-making were taught at more universities than human-centred factors considered to *influence* decision-making (**Table 5.4**). Indicators of animal welfare or quality of life were reportedly taught at all universities. Likewise, all universities taught students the use of prognostic indicators to inform euthanasia decision-making. The use of changes in behaviour as indicators for decision-making were reported in fewer universities and a similar trend was seen for clinical signs and pain. Two universities did not report teaching pain as an indicator for euthanasia decisions.

Prognosis was a broad category and included both the concept of prognosis as an indicator informing euthanasia decisions, as well as specific conditions that usually

necessitate euthanasia. For example, from a participant discussing prognostic indicators in equine euthanasia decision-making:

“...indications for euthanasia would include intestinal rupture, complicated long bone fracture, diagnosis of Hendra virus disease.”

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Table 5.3 Categorisation of euthanasia decision-making factors and indicators reported by III participants interviewed at eight Australasian Universities.

Major categories have been formulated by the first author based on common themes.

CATEGORIES	SUB-CATEGORIES OF RESPONSES
HUMAN-CENTRED FACTORS THAT MAY INFLUENCE DECISION-MAKING	
OWNER FACTORS	
Financial considerations	Owner afford ongoing care, Animal value, Cost to owner, Cost-benefit ratio, Money issues, Financial, Financial constraints, Financial implications to owner, Economic, Economic value, Culling herd, Harvesting, Fit for breeding, Production potential, Production parameters
Owner decision	Depends on individual owner, Owner decision, Owners know when it's time, Individual judgement, Everyone has different end points, Client perceptions, Owner concern, Owner input, Client decision, How owner feels about it, Outcome acceptable to owner, Quality of life from owner's perspective, Owner refuses to treat
Owner coping with animal	Farmer needs, Owner coping with animal, Living circumstances, Owner involvement and whether capable, Owner capable, Client enjoying animal
Cultural or religious reasons	Owner religion, Owner culture, Public opinion
Human-animal relationship	Human-animal bond, Attachment
VET FACTORS	
Veterinary resources	Availability of care, Time required to treat, Staff required to treat, Reasonable use of resources, Veterinary interest, Remote area
Veterinary experience	Based on experience, Just common sense
ANIMAL FACTORS	
Individual animal differences	Case by case basis, Depends on individual animal

Animal demographics	Age, Geriatric, Lactation stage, Sex
Animal type	Livestock – pet versus production, Herd investigation, Individual versus group, Individual versus population decision, Owned versus wild, Animal threatened or endangered
ANIMAL- BASED INDICATORS THAT MAY INFORM DECISION-MAKING	
Animal welfare or quality of life	Animal welfare, Welfare over time, How animal is doing, Animal’s needs, How well animal is coping, Overall quality of life, Quality of life score, Suffering involved, Minimise stress, Animal no longer looks forward to favourite thing, Reduced quality of life, More bad days, More bad days than good, Not happy, Distress, Welfare improvements, Enjoying everyday activities, Signs of enjoying life, Animal still doing 10 favourite things, Willingness to live, QoL at home, QoL enjoying food, QoL enjoying walks, QoL enjoying people/owner, QoL enjoying what motivates them, QoL impact of treatment on what they enjoy
Prognosis	Outcomes, Prognosis, Prognosis to discharge, Prognosis medium to long-term, Prognosis of return to function, Will animal be normal again, Likelihood of full recovery, Likely response to treatment, Response to treatment, No hope of recovery, Time to recovery, Very ill, Sick animal, No improvement, Rapid decline, Stress of hospitalisation, Euthanase if need palliative care, Will they be OK in captivity, 100% fitness for survival in wild, Probability of rehabilitation and release, Different wild animals need release, Able to be rehomed, Cetacean re-stranding, Diagnosed with disease without treatment, Acute injury with poor prognosis, Number of treatments already, Days of treatment already, What animal goes through. Disease of injury-specific terms that may indicate a terminal diagnosis were also included e.g. terminal bone fracture, organ failure, down cow, chronic disease
Behaviour change	Behaviour, Behavioural assessments, Expressing normal behaviour, Behavioural changes, Normal behaviour, Self-trauma, Young suckle reflex, Lying down, Standing, Unable to rise, Recumbent, Activity, Responsiveness, Moribund, Mentation, Ambulation, Lameness, Severe lameness, Interacting with owner,

Interacting with other pets, Socialising with other animals and owner, Other animals in home, Appetite, Inappetence, Eating, Off food, Ruminating, When last ate, Normal diet, Drink, Toileting ability, Able to get outside to toilet, Urinating, Defaecating, Animal not keeping clean

Pain	Pain scores, Pain scale, Pain, Pain level, Minimise pain, Manageable pain, Tolerable pain, Uncontrolled pain, Intractable pain, Prolonged pain, Chronic pain, Pain unresponsive to analgesia, Increased heart rate, Posturing, General demeanour, Behaviour, Behavioural score, Increased respiratory rate, Blood pressure, Mentation, Teeth grinding
Clinical signs	Clinical signs, Clinical exam, Physiological assessments, Health status, High heart rate, Temperature, Blood parameters, Blood pH, Lactic acidosis, Sweating, Diagnostics, History, Medical history, Eat not vomit, Vomiting, Intractable vomiting, Diarrhoea
Body weight	Body condition score (BCS), BCS score, Body weight, Weight maintenance, Skinny, Weight loss, Chronic weight loss

Table 5.4 Number of representatives reporting teaching factors and indicators for euthanasia decision-making to students in the veterinary science degree at eight Australasian universities.

CATEGORIES	CATEGORY OF ANIMAL				OVERALL [†]
	Livestock	Equine*	Companion	Avian/wildlife	
HUMAN-CENTRED FACTORS THAT MAY INFLUENCE DECISION-MAKING					
OWNER FACTORS	4	5	6	5	7
Financial considerations	4	3	3	4	5
Owner decision	2	1	5	2	6
Owner coping with animal	2	1	3	2	4
Cultural or religious reasons	1	0	1	2	3
Human-animal relationship	1	0	1	0	1
VET FACTORS	2	0	1	2	3
Veterinary resources	2	0	1	2	3
Veterinary experience	1	0	0	1	1
ANIMAL FACTORS	2	2	4	5	6

Individual animal differences	0	1	3	1	3
Animal demographics	2	1	1	1	3
Animal type	1	0	0	4	5
ANIMAL-BASED INDICATORS THAT MAY INFORM DECISION-MAKING					
Animal welfare or quality of life (QoL)	5	3	8	6	8
Prognosis	6	6	6	7	8
Behaviour change	4	4	5	2	6
Pain	3	3	4	2	6
Clinical signs	2	3	4	3	5
Body weight	2	3	3	0	7

*Teaching euthanasia for equine was only reported at seven universities

†Number of universities that reported teaching this factor or indicator in any of the four animal categories

Use of tools of protocols in teaching

Most universities did not teach a formal tool or protocol for assessing animal welfare status or quality of life (**Table 5.5**). The two universities that did teach the use of such tools, taught tools or protocols that either related to overall QoL/welfare or aspects of it (e.g., pain). Of the six universities that did not teach the use of such tools, three gave qualifying information for their negative responses which suggests that the tools they teach students only assess aspects of QoL/welfare (e.g., pain, BCS). As an example, for university A, the one welfare portal, five freedoms, pain scoring tools and a variety of QoL scores were taught. For livestock and companion animals, prognostic indicators and body condition scoring tools were used; and to a degree the Glasgow composite pain score was used for dogs and small animals.

Most universities did not use a formal tool or protocol for assessing animal welfare status or quality of life (**Table 5.5**). Two universities did report using one, however, the qualifying information suggests that they were using tools that assess aspects of QoL/welfare (e.g., pain), rather than global assessments. For the six universities that did not use one in their teaching clinic, again, the qualifying information given suggests that the tools they do use only assess aspects of QoL/welfare or are designed for a specific purpose e.g., the modified Glasgow pain scale for assessing the need for analgesia.

Pain was the main aspect of welfare for which formal assessment tools were taught and used. Quality of life tools were mentioned; however, no specific details were given. Three universities mentioned using the Five Freedoms.

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Table 5.5 Whether or not students were taught a formal tool or protocol for assessing animal welfare status or quality of life in the context of making euthanasia decisions, and whether such a standard protocol or formal tool existed in the veterinary school clinic at eight Australasian universities.

UNIVERSITY	TOOL(S) TAUGHT?	QUALIFYING COMMENTS	TOOL(S) USED?	QUALIFYING COMMENTS
A	Y	One welfare Portal; Five Freedoms; Pain scoring tools; Variety of QoL scores	Y – for Livestock and Companion animals	Prognostic indicators and body condition scoring tools used; To a degree – the Glasgow composite pain score for dogs and small animals was used
B	N	Clinicians may use the Horse Grimace Scale; Five Freedoms are considered	N	
C	N	Badly taught modified Glasgow Pain Scale; Colorado State pain scale; no formal tool but participant does teach a cognitive function screening checklist – for use in older patients	N	Modified Glasgow pain scale used to assess need for analgesia, but not for EoL decisions
D	Y – for avian/	Five Freedoms; Specific assessment tools (guides) developed by Perth	N	

	wildlife category	Zoo for range of species (species based) e.g. elephants		
E	N	Uses BCS and pain scales, but don't use QoL measures	N	
F	N		N	Pain scoring based on the Helsinki pain scoring is used in small animals as a formal assessment tool, but mostly case by case basis
G	N	Pain scoring used for analgesia administration but no QOL scoring protocols used; Formal assessment tool for animals in chronic pain (objective HR RR BP etc and subjective parameters – bright, grinding teeth, behaviour score) charted over time	N	None known, just some pain scales
H	N		Y – for avian/ wildlife	We have analgesia assessment for post-op pain management; For meat chickens we have a sheet of criteria e.g. weight loss, appearance, general animal health signs we assess. Tied in

				with ethics. For anything we do in terms of research we have criteria and humane end points based on those.
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5.5. Discussion

Our study set out to explore how euthanasia is taught in Australasian veterinary schools. All universities taught aspects of euthanasia decision-making for all categories of animals, except one university, which ignored the equine category. At five universities, a variety of modalities were used. However, at three universities, limited modalities were reported, which increased the risk of students not being exposed to teaching relevant to euthanasia decision-making.

Very few universities reported providing opportunities for students to observe animal euthanasia, despite the value of this teaching modality. The reasons given for not exposing students to euthanasia included a need to protect students from a stressful situation or to protect client privacy. This may be why new graduate veterinarians are not confident performing a euthanasia in practice; that is, they do not have enough experience before graduation (Dickinson, Roof, & Roof, 2011; Hart, Hart, & Mader, 1990; Tinga et al., 2001). Littlewood et al. (2018) found that the development of technical skills necessary to perform a euthanasia was also heavily reliant on cases presenting in later years of the programme.

Educators, asked what factors they taught students to use in making euthanasia decisions, reported financial considerations, owner decision, and how the owner was coping with the animal as the most common human-centred factors *influencing* decision making. Cultural and religious factors, and the human-animal relationship, have a significant impact on euthanasia decision-making in veterinary practice (Goldberg, 2016; Kemp et al., 2016; Tannenbaum, 1993), but

Australasian veterinary students were rarely taught about them. This may create a knowledge gap for euthanasia decision-making in clinical practice.

The teaching of a number of animal-based *indicators*, which informed euthanasia decision-making, was mentioned. Indicators of animal welfare or QoL were described frequently, except for equids, and prognosis was taught at many universities as a factor that may inform decision-making. Surprisingly, pain as a factor in euthanasia decisions was only reported by half of representatives for the companion animal category, despite it being included in most of the protocols for QoL assessment (e.g. Giuffrida, Brown, Ellenberg, & Farrar, 2018; Tatlock, Gober, Williamson, & Arbuckle, 2017; Vols, Heden, Kristensen, & Sandoe, 2017).

The final question asked whether or not the veterinary school clinic had a standard protocol or formal assessment tool to assist with euthanasia decisions. The use of such tools in the clinic was of interest because this is where senior veterinary students receive much of their training, and where participants would have been able to exert the most control over their education in later years. A formal tool or protocol was rarely taught, or applied in the university hospitals, in our study. Moreover, there was disagreement among participants about what constitutes a formal tool or protocol for assessing animal welfare status or QoL in the context of making euthanasia decisions. Consequently, although students may have been taught tools for assessing overall animal welfare (e.g., The Five Domains Model (Mellor et al., 2020) The Five Freedoms (Anonymous, 2009), or specific aspects of

it, (e.g., The Glasgow Pain Scale (Reid et al., 2007)), it is unknown if these were taught or used specifically in the context of euthanasia decision-making. Whether or not the tools taught are appropriate to be used for euthanasia decision-making is debateable. The Glasgow Pain Scale was only intended and validated for post-operative pain in healthy dogs and cats, not for animals near the end of their lives (Reid et al., 2007). The Five Freedoms were not designed to assess animal welfare (Anonymous, 2009).

Thus, it was very rare for a standard protocol for decision-making to be used despite animal welfare/QoL being taught as an indicator to inform euthanasia decision-making at all eight universities in this study. However, the explanations given in our study were somewhat contradictory; the use of pain scores were included in the open-ended answers for both 'yes' and 'no' answers. From this we conclude that the assessment tools reported were used for purposes other than making euthanasia decisions, such as assessing post-surgical pain (Reid et al., 2007). Reasons for this apparent under-utilisation of standard protocols could include: veterinary educators who are unfamiliar with the published protocols or their use; a lack of validity evidence for the published scales or; most likely, because the complexities of euthanasia decision-making have yet to be fully represented in a simple scale (Mullan, 2015). If euthanasia decision-making was a formal topic within veterinary curricula there would have been more consistency in what was taught. These inconsistencies may result from time pressures inherent in veterinary education, that is, not every subject can be covered in detail within the

curriculum (Lord et al., 2017). The result is that not all graduates of these universities will have the necessary skills and competencies to confidently manage the euthanasia decision-making process for the animals under their care.

Additional development in veterinary education should focus on teaching systematic and valid protocols for assessing animal welfare state or QoL in the context of euthanasia decision-making. A possible direction for this work might include a veterinary curriculum that includes animal welfare throughout the degree, enabling a move from basic concepts towards clinical applications (Main, 2010; Main et al., 2005; Shivley et al., 2016). Finally, qualitative studies that examine the needs of owners and veterinarians during euthanasia management, particularly in the context of companion animal decision-making, would help inform our teaching of appropriate topics. This information could be used to inform curriculum reviews and ensure that veterinary teaching reflects what is required of veterinarians in practice.

The primary limitation of our study was that the data are university-based. We have no information about the degree of exposure to euthanasia, in what detail decision-making topics were taught, or what proportion of students were exposed. All we can ascertain from a positive response in any category is that at least one educator at the university taught something of relevance at least one time. There is also potential that the individuals who taught euthanasia decision-making within the universities were not interviewed. However, the snowball sampling

approach used was likely to have minimised this risk as it allowed us to reach more educators than other sampling methods, while still allowing for qualitative data collection (Lyons, 2015). This is in contrast to previous work, which relied on curriculum documents or reports from heads of school to obtain the data and lost the detail we were able to achieve here (Dickinson & Paul, 2014; Dickinson et al., 2011).

The difference in participant numbers from each university may reflect the differences in staff numbers. However, it could also be a result of differences in the emphasis put on euthanasia teaching or individual representatives' success in identifying and interviewing participants. Some of the answers given by participants may reflect differences in how they understood key terms, which were not defined in the interview guide. For example, there is disagreement as to whether 'euthanasia' refers only to a humane method of killing, or that death must also be in the animal's interest (Leary et al., 2020). It is worth noting that the largest number of participants were interviewed by the first author at the pilot university and, if more detail was obtained for teaching at this university, this could influence findings by skewing the categories of teaching content.

Interviews were also conducted and summarised by a different representative at each university before being analysed by the main author. This introduces potential bias into the data due to inconsistencies in how these summaries were generated by each representative. However, a structured interview was chosen over

written surveys to allow for in-depth responses from participants to be collected and for representatives to further explain questions that may have otherwise been misunderstood. This approach also allowed for more detailed and accurate information of this teaching than what has been obtained from studies that relied on curriculum documents or information obtained from heads of school or department.

Overall, our results show that aspects of euthanasia decision-making are taught in an *ad hoc* manner to veterinary students in two of the eight Australasian veterinary schools. Since the majority of this teaching relied on discussion of clinical cases, and because presentation of such cases is variable, it can be reasonably assumed that not all students at these veterinary schools are being taught how to make, or assist owners in making, euthanasia decisions. These findings further emphasise the need to reassess current models of veterinary training in order to improve the welfare of animals that are subject to end of life care. One representative captured this sentiment well in this statement from a participant about euthanasia teaching at one of the Australasian veterinary schools:

“We don’t teach that well to students I don’t think – how to handle it, when to pull the plug. It is something you need to learn and be good at. We don’t give them very much guidance.”

Future research could be aimed at obtaining a more detailed understanding of euthanasia decision-making teaching in higher education, for example, via

thematic analysis on transcriptions of detailed interviews to better estimate actual teaching (Christiansen, Kristensen, Lassen, & Sandoe, 2016; Magnier et al., 2011; Norman, 2017).

There are implications for the veterinarian, animal, client, business, and veterinary profession of inadequate training in euthanasia decision-making. Problems resulting from new graduates not receiving adequate training in euthanasia decision-making during their veterinary degree include: emotional or moral stress in the veterinary profession (Fawcett, 2013; Knesl et al., 2017; Moir & Van den Brink, 2020; Rollin, 2011) increasing the risk of mistakes being made and animal welfare being compromised, and a deterioration of the veterinary-client relationship.

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CHAPTER 6: Grief management teaching



How management of grief associated with ending the life of an animal is
taught to Australasian veterinary students

The material presented in this chapter has been published:

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Results are presented in the style of the journal, and some of the Methods section is similar to that of **Chapter 3**.

6.1. Abstract

Veterinarians have an important role in supporting and understanding their clients' grief. Veterinary schools have a duty to teach students how best to manage grief – both that of the students/future veterinarians and the clients. This study explores how grief management, associated with ending the life of an animal, was taught to students in eight Australasian veterinary schools. A questionnaire-style interview guide was used by a representative at each university to conduct structured interviews with educators in a snowball sampling approach. Educators were interviewed about the teaching of grief management for four categories of animals: livestock, equine, companion, and avian/wildlife. The terms used by participants to describe what they taught were grouped into common themes. Teaching was defined by individual participants and included structured and unstructured approaches. The stage in the degree (preclinical or clinical years) that grief management was taught in the veterinary curriculum and by whom (e.g., clinicians or psychologists) is also described. Grief management was taught more in preclinical than clinical years. However, due to how grief was characterised, much of this teaching was general 'non-specific' teaching that included all categories of animals. Client grief was taught more generically, whereas grief of veterinarians was taught using specific examples given by clinicians. A more robust end-of-life (EoL) management curriculum that includes all aspects of grief management is likely to increase job satisfaction, client happiness, and professional satisfaction.

6.2. Introduction

Grief management is the most widely discussed area of veterinary end-of-life (EoL) management (e.g. Morris, 2012; Testoni et al., 2017; Testoni et al., 2019). The abundance of references to grief management in the veterinary, and related, literature implies that it is an important topic for owners and veterinarians. Compared to their medical counterparts, veterinarians are more likely to encounter death; this is because they are usually the ones effecting it, and because their patients have short lifespans (Marton et al., 2019).

In Western social culture, grief relating to the loss of an animal is not always legitimised by peers (Adams et al., 1999; Chur-Hansen, 2010; Dickinson et al., 2010; Marton et al., 2019; Redmalm, 2015; Testoni et al., 2019). Owners who struggle to deal with grief at the loss of their animal are at risk of complicated grief and depressive episodes, and anticipatory grief may cause them to delay euthanasia in an effort to avoid negative emotions (Adams et al., 1999; Testoni et al., 2017). There are obvious implications for animal welfare if animals experiencing poor quality of life are not euthanized in a timely manner (Knesl et al., 2017; Rollin, 2011). Veterinarians, as members of an animal care profession, have an important role to play in supporting and validating their clients' grief (Adams et al., 1999; Marton et al., 2019; Peck, 2005; Testoni et al., 2019).

Veterinarians may also suffer grief, i.e., moral stress, associated with EoL management (Fawcett, 2013; Moses et al., 2018; Rollin, 2011; Sanders, 1995; Siess et

al., 2015). If not managed appropriately, veterinary grief can result in compassion fatigue and depressive episodes, both of which are detrimental to personal wellbeing and professional integrity (Rollin, 2011; Siess et al., 2015). Veterinary schools have an obligation to teach students how best to manage grief – both that of the students/future veterinarians and the clients (Molgaard, 2018). This training could enable future veterinarians to better manage the entire process of animal EoL care and help to fulfil their role as authorities in animal welfare (Anonymous, 2011).

Grief management is not explicitly noted in Codes of Professional Conduct (e.g. Anonymous, 2011; Anonymous, 2012a) or as Day One competencies of graduating veterinarians (e.g. Anonymous, 2012b, 2014, 2016, n.d.). Only effective communication skills are specifically mentioned. However, although communication skills are important for effective grief management, it should be noted that this specific context is not mentioned by these accrediting or regulatory bodies.

Various topics pertinent to teaching of grief management have been explored, for example, how grief is experienced by animal owners (Adams et al., 1999; Endenburg et al., 1999), or how professional skills (Adams et al., 2004; Burns et al., 2006; Tinga et al., 2001) and communication (Butler et al., 2002; Kogan et al., 2004) are taught to veterinary students. Some authors have explored how EoL issues are taught to veterinary students, though, these earlier studies relied on

curriculum documents or information obtained from heads of school or department (e.g. Dickinson & Paul, 2014; Dickinson et al., 2010; Shivley et al., 2016). However, the accuracy of information gathered from curricula documents is questionable, and department heads are not always aware of the details of what is taught by their staff (Bath et al., 2004). To the best of our knowledge, no studies have explored in detail how grief, associated with ending the life of an animal, is taught to veterinary students.

Our larger study aimed to explore how aspects of EoL management were taught to veterinary students in all eight Australasian veterinary schools. In (Littlewood et al., 2018) we explored how technical EoL management was taught. We found that euthanasia techniques were taught at more universities in clinical years than preclinical years and outlined the importance of veterinary competency in the technical skills necessary to perform animal euthanasia. In the second part of this study (Littlewood et al., [unpublished]), we explored how EoL decision-making was taught to these students. EoL decision-making was taught in an *ad hoc* manner. The majority of this teaching, for companion animals, relied on discussion of clinical cases, and because presentation of such cases is variable, it can be reasonably assumed that not all students are being taught how to make, or assist owners in making, EoL decisions. The present, and third part of the study, explores how management of grief, associated with ending the life of an animal, was taught to veterinary students. Specifically, we identified at which stage in the veterinary degree (preclinical or clinical) grief-related subjects were taught, how these topics

were taught (e.g., via lecture or during clinical rounds), who was responsible for this teaching (e.g., clinicians, academic, or psychologists), and what content was taught to veterinary students to assist with managing grief – both that of the students/future veterinarians and the clients.

6.3. Materials and Methods

The project was evaluated by peer review and, according to criteria set by Massey University Human Ethics Committees (MUHEC), judged by the authors to represent low risk to the participants, universities, and the veterinary community. Consequently, it was not reviewed by one of the Committees. Instead details of the project were notified to MUHEC (notification number 4000015103).

Data collection

Data were collected in structured interviews with educators (the ‘participants’) at all eight veterinary schools in Australasia. The curricula years assessed were 2015/2016. For full details of the data collection process, see (Littlewood et al., 2018). Briefly, a questionnaire was developed and first used to guide interviews with participants at Massey University in New Zealand. The final interview guide developed during this process was sent to a representative at each of the seven veterinary schools in Australia. The representatives who carried out the interviews with participants were academics involved in teaching animal welfare science or those who had special interests in animal welfare. All interviews were completed by January 2017.

The representative at each university approached participants they identified as likely to teach areas related to animal euthanasia, animal welfare, final year veterinary clinical rotations, veterinary ethics, and counselling or grief management. A snowball/chain sampling approach was used (Lyons, 2015; Magalhaes-Sant'Ana et al., 2014; Onwuegbuzie & Leech, 2005; Polkinghorne, 2005); each participant was asked to identify other individuals for interview. Thus, the number of participants interviewed varied among universities. Further details on data collection and interview guide design are provided below. During the interviews, representatives asked the questions in the interview guide and recorded each participant's answers. The representatives collated the data from all participants and reported the final results for that university in a tabular form.

Interview guide design

Full details of the interview guide design and implementation are given in a previous publication (Littlewood et al., 2018). Questions were asked about four main categories of animals: (1) Livestock: cattle, sheep/goats, deer, pigs, llamas/alpacas; (2) Equine: horses, donkeys; (3) Companion animals: cats, dogs, small mammals (e.g., guinea pigs, rabbits, rats); and (4) Avian/Wildlife animals: chickens/waterfowl, birds, mammals, reptiles, fish, other. For each animal category, there were three sections (EoL decision-making, Technical management, and Grief management). Each question was a combination of binary (yes/no) and open-ended questions.

Data about teaching of grief management came from one question: 'Do you teach undergraduate veterinary students how to manage grief, their own and their clients, in situations involving the following broad categories of animal species?' Participants who answered 'yes' were then asked for details of when in the veterinary program they taught such material, how it was delivered (e.g., lecture, tutorial), details of the content taught, and who taught these topics.

Information recorded for each university included: details of the degree structure, number of participants interviewed, the gender and graduation year of each participant (highest degree), number of participants who reported teaching grief management material for each category of animal, and average number of veterinary science students in each annual intake (as a proxy for faculty or university size).

Data analysis

The intention was to use binary data from individual universities to construct frequency tables in Microsoft Excel to compare the stage of the degree, how it was taught, who taught it, and what was taught for each category of animal. Relevant teaching was counted once for a university in a category if at least one participant there mentioned teaching it. Information pertaining to university degree structure was used to assign teaching to either preclinical or clinical teaching.

However, tabulating frequency data according to animal category was not as effective as we had envisaged. Three of the eight representatives explicitly reported that teaching was generic across all animal categories. These representatives stated this on their response forms or wrote “as for livestock” or “same as above” under additional animal categories. One representative only completed the table for one animal category and explained in the comments section that it was because grief teaching was for all animal categories and not specific. Another four representatives gave responses that implied that much of the grief teaching was generic by repeating some statements between categories of animal. Because of these limitations, the frequency data were generated over all animal categories for the stage of the degree, how it was taught, and by whom.

Open-ended answers were captured in Microsoft Word and used to further explore the frequency data and to conduct a systematic thematic analysis of teaching content as per the methods outlined by Braun & Clarke, 2013). A range of terms was used by representatives to describe the details of grief management teaching reported by participants. These were categorised by the first author based on common themes (Braun & Clarke, 2006). For example, terms such as ‘euthanasia is a gift for animal's welfare’, ‘favour for animal’, ‘doing right thing for animal’, and ‘ending animal suffering’ were all categorised as ‘Doing right thing for animal’.

6.4. Results

Demographics

The degree structures of the eight veterinary schools are shown in **Table 6.1**. In three universities, the degree structure comprised four years of preclinical teaching followed by one to two years of clinical teaching. In the other five universities, there were three preclinical years followed by one to three clinical years. One hundred and eleven participants were interviewed at eight veterinary schools. Participant numbers varied from 8 to 28 at a particular veterinary school (Littlewood et al., 2018).

Table 6.1 Veterinary science degree structures at eight Australasian Universities.

University	Preclinical year(s)*	Clinical year(s)*	Average annual student intake
Massey University	1 to 4	5	124
Melbourne University	1 to 3 [‡]	4 [‡]	120
The University of Queensland	1 to 3	4 to 5	120
Charles Sturt University	1 to 4	5 to 6	65
The University of Sydney [†]	1 to 4	5	130
The University of Adelaide	1 to 3	4 to 6 [‡]	65
James Cook University	1 to 3	4 to 5	110
Murdoch University [†]	1 to 3	4 to 5 [‡]	105

*Preclinical years were defined as predominantly theory-based teaching, while Clinical years were defined as predominantly clinical/practical-based teaching by the individual representative at each university.

[†]Universities that were converting from an undergraduate (BVSc) to a postgraduate degree (DVM) at the time of the study (2015/2016 curricula years)

[‡]Postgraduate years

Timing and modality of grief management teaching

Students were taught about client and veterinarian grief in a number of ways. Grief teaching in preclinical years (reported at 8/8 universities) was mostly proactive and generic and taught via lectures or using role play. Participants at seven universities taught grief management via lectures, and seven representatives reported that tutorials or role play were used to teach grief management.

Most grief management teaching in clinical years (reported at 7/8 universities) was case-by-case or via tutorial or role play. Participants at four of the seven universities indicated that this teaching was unstructured or informal. Representatives gave examples of it being taught as a discussion about a specific clinical case that involved grief management in clinical years. Other representatives were less explicit and reported this teaching in clinical years on a case-by-case basis.

Grief management was taught differently by counsellors compared to clinicians

Participants at four of the eight universities reported using student counsellors to teach grief management. At two universities, some academics and clinicians reported not feeling qualified to teach grief management and told their representative that they rely on student counselling services to do this. Three universities did not use counsellors or external consultants to teach grief management and instead relied upon clinicians or academics.

Grief management teaching was apparently proactive if taught by counsellors and reactive if taught by clinicians. For example, counsellors at four universities taught students grief management strategies in preclinical years in preparation for later years, whereas clinicians helped students and clients cope “if needed”. In other words, this would be taught if a case presented that the clinician thought necessitated grief management; owner or veterinary.

The four universities that used counsellors to teach grief management did so for general grief topics. For example, participants reported teaching ‘The SPIKES protocol for delivering bad news’ (Baile et al., 2000) or ‘The grieving process’. In contrast to counsellors, clinicians reported giving students examples of cases that required grief management or might talk through the grief management aspects of a euthanasia case that had occurred during the student’s clinical rotation.

Teaching content

The themes presented in **Table 6.2** are an amalgamation, in short form, of common terms used by representatives to describe the detailed content of grief management teaching reported by the participants they interviewed. These were divided into two overall categories: owner grief and grief for veterinarians. ‘Grieving process/management’ was the most commonly reported owner grief category and was taught at all eight universities. This was followed by ‘How to

support clients afterwards' and 'Communication skills' taught at 5 of 8 universities. Only one representative reported teaching 'Veterinarian makes decision'.

For grief of veterinarians, the category 'Managing own (veterinary) mental health' was reported by representatives at seven universities. This was followed by 'Veterinarian OK to show emotion or empathy' and 'Personal (veterinary) grief' which were both reported at 6 universities. However, one representative reported 'Veterinarian limits grief in front of client'.

Table 6.2 Categorisation of subject areas relating to grief management taught by III participants interviewed at eight Australasian Universities.

CATEGORY	RESPONSES
OWNER GRIEF	
Grieving process/management	Multiple reasons for grief, About the grieving process, Different styles of grief responses, Grief of unmet future expectations, Types of grief and loss, Different expressions of grief, Stages of grief, Dealing with client grief, How to manage client grief, Provision of grief support, Cognitive behavioural therapy
How to support clients afterwards	How to support clients after, Follow-up phone call, OK for owner to feel better after, Send sympathy card, Send flowers, Resources for clients, Make post mortem arrangements, Memento of animal's hair, Tell client OK to get new pet, Console owner, Stay with owner after euthanasia
Communication skills	Communication, Communication skills, How to talk to owner, Calgary Cambridge guide, Delivering bad news, SPIKES for delivering bad news, SPIKES for communication
Anecdotes from veterinarian	Anecdotes and personal stories taught, Own experiences, Reflect on experiences
Individual owner differences	Client-orientated, Different client in different situation, Owner perspective, Cultural differences, Use different wording for different clients, Consider client perspective and needs
Human relationship to animals	Human-animal bond, Owner-animal relationship affects grief, What pet represents to owner, Attachment to animals, Different types of attachment people have, Pet versus production animal relationship, Different animal types, Endangered animals harder to euthanase, Longer-lived animals harder for owner, Less attachment to wildlife, Production animal owners grieve too
Support owner decision	Support owner decision, Validate owner decision, Support owner
Timing important	Time important, Do euthanasia quickly, Tell owner quickly, Discuss with owners at time
Owner stressors	Financial stress, Farmer stress and how to help, Large scale destruction and how to deal with producers

Veterinarian makes decision	Vet often makes decision for client
GRIEF OF VETERINARIANS	
Managing own (veterinary) mental health	Vet stress, Stress reduction strategies, Stress management, Stress counselling, Life balance, Setting boundaries, Mental health first aid, Emotional intelligence, Resilience, Manage own grief, Compassion fatigue, Impact on clinician, How clinician copes, Self-awareness, Self-care
Veterinarian OK to show emotion or empathy	OK for vet to show emotion, OK to show grief in front of client, Instil empathy in students, Show empathy, Be compassionate, Be understanding
Personal (veterinary) grief	Normal for vet to feel sad, OK to be upset, OK to be emotional, Explore personal grief, Longer hospitalised harder to euthanase, Personal grief, Longer working with animal makes it harder for vet, Self-reflection and ethics
Personal (veterinary) trauma	Vicarious trauma, Personal trauma, Accident trauma, Burnout, Mental health may be an issue
Dealing with difficult situations	Client guilt, Client personal trauma, Client psychological trauma, Dealing with anger, Dealing with difficult situations, Recognising signs of suicide, Managing clinic relationships, Referrals, Use a prognostic approach to manage
Doing right thing for animal	Euthanasia is a gift for animal welfare, Doing favour for animal, Doing right thing for animal, Ending animal suffering, Vets should not suffer grief
Death is part of being veterinarian	Death is part of industry, Part of art of veterinary practice, Not easy part of job
What to do during euthanasia consultations	Buy into client's beliefs, How to make death peaceful, Prewarn owner of potential euthanasia issues
Unique issues for wild animals	Team-based euthanasia decision for zoo animals, More wild animals killed than domestic
Veterinarian limits grief expression in front of client	Be professional, Professional means limiting emotion

Categories have been formulated by the first author based on common themes in the responses. Responses are short-hand versions of topics reported by representatives at each university.

Training was dependent on context of interaction with animal rather than animal category

When differences among animal categories were reported, they were minor. Participants at four universities specified different teaching relating to avian/wildlife animals. In particular, representatives reported that there is an *“increased euthanasia incidence in wild patients...has grief implications”* and there is a *“greater need for compassion fatigue resources”* for people dealing with these animals when compared with those working with other animals. Representatives often clarified which species grief management was taught about within this category, for example, one recorded *“...not for fish or chickens”*. Some representatives gave less details for grief management teaching relating to wildlife in the avian/wildlife category or did not answer some sections for this animal category.

Participants described teaching grief management differently depending on their client’s relationship, perceived or otherwise, with their animal. This difference was most obvious when comparing the teaching for livestock and pet animals. Pet animals could be any hobby farm animal, pleasure horses, companion animals, birds or wildlife. Therefore, all of our animal categories were represented.

Some participants wanted to be clear to students that there can still be grief associated with loss of production animals: *“...not to assume that there is no emotion/sadness/grief attached to production animals...”*. Others proposed to widen the gap between these categories by teaching students to have different

discussions with companion animal and equine owners versus livestock farmers. For the livestock category, one representative at a university reported *“Follow up with owners of ‘pets’...Not treated like another livestock owner who doesn’t care.”*

Companion animal teaching included examples of context-specific differences. For example, at one university, owner grief was not taught for shelter medicine, but was for client-owned animals. In contrast, compassion fatigue for veterinarians was taught more with respect to shelter medicine than other companion animals.

Participants recognised the need to improve veterinary grief management training

Representatives at four universities reported participant comments reflecting the need for improved grief management teaching to veterinary students. One of these representatives went as far as indicating that the head of university recognised the need for a dedicated grief counsellor on site.

A few of the clinicians who were interviewed recognised the need for more training in grief management for educators. They reported not being comfortable teaching grief management to students, despite recognising its importance.

6.5. Discussion

This study used structured interviews with educators at eight universities in Australasia to explore how grief management was taught to veterinary students in 2016. Specifically, we explored when grief management was taught in the curriculum, how it was delivered and by whom, and details of content taught. Overall, the findings suggest that general grief topics were taught, with minor details specific to animal categories. This teaching differed depending on how educators perceived the client's relationship with their animal. There were also differences in how (proactive or reactive) and when (preclinical or clinical years) this subject was taught, and this was dependent on whether the educator was a clinician or counsellor. Importantly, there was a clear recognition that grief management teaching needs to be improved in the veterinary universities studied.

Simply raising the issue has had an immediate effect; many representatives reported that the interview process had invited discussion about the current curriculum and how well it prepared students for navigating grief in clinical practice. Subsequent feedback to heads of schools resulted in increased EoL teaching in some participating universities. A number of these veterinary schools were undergoing curriculum changes during the interview process, while others have subsequently changed their curriculum to integrate grief education.

Grief management teaching was largely the role of academics and clinicians, whose own training in grief management was not known, with only small numbers of

student counsellors or external consultants involved. It would benefit student learning to involve both clinicians and counsellors in the process of grief management training. Clinicians have the benefit of experience with clinical cases and the human-animal relationship, whereas counsellors and psychologists have detailed knowledge of human psychology and proactive management strategies (e.g. Holcombe et al., 2016; Maccallum & Bryant, 2019).

In this study, it was reported that counsellors taught grief management proactively, whereas clinicians taught it reactively when students or clients needed it, that is, related to a specific clinical case. Proactive teaching is beneficial in that students may be better prepared for situations when they arise, and do not have to rely on educators recognising the need for it to be taught (Magnier et al., 2011; Tynjälä, 2008). Additionally, this method of teaching ensures all students are taught how to deal with grief, rather than just those opportunistically exposed to clinical cases needing grief management discussions (Dickinson et al., 2010; Littlewood et al., 2018; Magnier et al., 2011; Tynjälä, 2008).

However, a potential issue with proactive teaching is that students may not understand the need for it if it is taught early in the curriculum. This may lead to students disengaging from the learning process (Lane, 2008; Nandi et al., 2000). This lack of engagement may occur if proactive teaching is theoretical and didactic, rather than experiential and reflective. Experiential learning and reflective sessions encourage engagement with the material being presented (Barron et al., 2017;

Chun et al., 2009). However, managing clients' emotions may require additional communication skills training (Meehan & Menniti, 2014). Teaching grief management in clinical years has the benefit of students associating this teaching with a 'real world' case, client, and their animal(s). This association adds value to the material being taught and contributes to the students hidden curriculum (Hafferty, 1998; Larkin, 2017). The optimal pedagogical approach may be integrative, by teaching grief management generically in preclinical years, with some reflexive sessions, and following with a focus on experiential learning and specific cases, in later clinical years (Barron et al., 2017; Dickinson et al., 2010; Lane, 2008; Tynjälä, 2008).

The themes presented in **Table 6.2** show the breadth and depth of grief management topics taught to veterinary students. General grief teaching was a major feature of the owner grief category. For example, students were taught about the human grieving process, how to manage it, how to support clients afterwards, and communication skills. Grief of veterinarians was taught generically, but participants also taught topics specific to EoL management of animals. To illustrate, some students were taught to consider how much grief was appropriate for a veterinarian to display in front of his/her client during a euthanasia consultation. These findings suggest that client grief was dealt with more generically, whereas, teaching grief of veterinarians included more specific examples. This fits with the statement by participants that they were not comfortable teaching grief management with the result that they instead gave

students anecdotes from their personal experience. Anecdotes can be helpful for students in professional careers, as it gives them practical, problem-based solutions to situations they may experience themselves (Lane, 2008; Nandi et al., 2000). However, these anecdotes can be problematic if the messages students receive from them are counter to earlier training in grief management. Anecdotes risk contributing towards a hidden curriculum that sends mixed signals to students and confuses their learning (Hafferty, 1998; Larkin, 2017). Curriculum alignment of topics between earlier (preclinical) and later (clinical) years has the potential to alleviate the potential for this form of hidden curriculum in veterinary education (Baguley, 2006; Burns et al., 2006).

In our study, grief management was taught relatively similarly across animal categories in the participating veterinary schools. Training in grief management depended more on how animals were used or the context of this use. Much of the literature focuses on grief experienced by companion animal owners because of the emphasis of the human-animal bond in this setting (e.g. Morris, 2012; Siess et al., 2015; Testoni et al., 2019). As a result, livestock, equine, and avian/wildlife owners or guardians may be excluded from discussions of grief management (Peck, 2005). A client's relationship to his/her animal was a factor in how grief management was taught in these universities. This was particularly obvious when comparing livestock and pets and likely reflects differences in how animals are used or perceived, and people's relationship with them. For example, people are more likely to develop a close relationship with animals with which they share a house,

such as their pets, whereas the care of livestock species is unfamiliar to many people (Chur-Hansen, 2010; Sealey & Charles, 2013; Serpell, 2004; Testoni et al., 2019; Testoni et al., 2017). This close relationship may result in intense grief at the loss of a pet (Endenburg et al., 1999; Testoni et al., 2019; Testoni et al., 2017). However, it is incorrect to assume that grief is only experienced as a result of the loss of a 'pet' or 'companion' animal (Chur-Hansen, 2010). The human-animal relationship extends to that between farmer and livestock, although the type of relationship may differ (Chur-Hansen, 2010; Serpell, 2004). Farmers also experience helplessness or grief, and post-traumatic distress can be associated with losses to livelihood, and financial hardships, as a result of livestock death or depopulation (Chur-Hansen, 2010; Olff et al., 2005; Peck, 2005).

Participants reported that, when teaching management related to avian/wildlife, there was a "greater need for compassion fatigue resources". This most likely happened because of the high euthanasia incidence occurring for wild or avian animals requiring veterinary intervention (Tribe & Brown, 2000). A number of authors have drawn attention to compassion fatigue in wildlife carers (Hess, 2013; Yeung et al., 2017) and veterinarians (Rank, 2009). Our findings support the importance of this phenomenon in that veterinary educators recognised the need to teach students about compassion fatigue associated with wildlife care.

Veterinary students were often taught that "they are doing the right thing for the animal" by euthanizing it. Because this was reported in the grief management

section of our survey, it implies educators believe this knowledge assists students with managing veterinary-associated grief. However, this may not be the case, and normalising death in an animal care profession, such as veterinary science, may lead to cognitive dissonance (Bartram & Baldwin, 2010; Fawcett, 2013) (i.e., where students alter their belief systems and behaviours to reduce the mental discomfort of conflicting attitudes). Given that performing animal euthanasia is an essential role for Western veterinarians, perhaps a better approach may be to remind students of the value of performing it, while also discussing ethical and welfare issues associated with carrying it out on animals under their care.

It is difficult to determine from these results exactly what was being taught to veterinary students in terms of grief. The 'grieving process', when reported, could have represented a huge area of EoL teaching, or it could have been limited to teaching students the typical stages of grief with very little information on how to deal with them in their clients or themselves. Alternatively, this could form a large section of the curriculum. The detail obtained in this study was insufficient to make these inferences. This, combined with the generic nature of the information reported, made the data difficult to analyse. However, grief management is clearly an important topic in veterinary education (Morris, 2012; Testoni et al., 2019; Testoni et al., 2017).

Despite the majority of participants apparently agreeing that grief management is important in veterinary education, there were still participants who did not feel

comfortable teaching it or who thought educators should be further trained in the area. It is important to note that the participants interviewed in this study were those that taught aspects of EoL management for animals. Therefore, they were best placed to discuss the grief associated with ending animal life. However, it appears that opportunity for teaching grief management did not match competency or confidence in teaching. Instead of relying on counsellors to teach grief management, it would be beneficial for clinical staff to be trained in dealing with grief education as cases arise. Alternatively, a multidisciplinary clinical team that includes human health professionals such as counsellors and psychologists may be the way forward for EoL management (Sharkin & Knox, 2003).

This study has described the current status of grief management teaching in Australasian veterinary education. Grief management was taught more formally in preclinical years than clinical years. However, due to how grief was characterised, much of this teaching probably represented general 'non-specific' teaching that included all categories of animals. These findings may have implications for how veterinary grief management is taught internationally. Accreditation requirements of international regulatory bodies are not specific about grief management teaching in veterinary curricula (e.g. Anonymous, 2017, 2018). Therefore, this topic may not be recognised as a core curriculum requirement by many veterinary schools, leading to non-specific teaching of it, if at all. In (Littlewood et al., 2018), teaching of technical euthanasia skills relied on a case presenting during a clinical rotation and the veterinarian being comfortable allowing student participation in

the case. Grief management education during clinical rotations had the added complication that many clinicians were not confident, or did not feel it was their responsibility, to teach it.

Structured interviews were conducted and summarised by a representative at each university before being analysed by the main author. This introduces inherent bias in the data due to potential inconsistencies in the way representatives conducted interviews or created summaries from them. However, a structured interview was chosen over written surveys to allow for in-depth responses by participants to be collected and for representatives to further explain questions that may have otherwise been misunderstood. This method has also been shown to increase response rate (Battistutta et al., 1983). Unfortunately, the primary interviews were not recorded for later analysis by a single person. This would have allowed for a more detailed thematic analysis of the data and would be best applied in subsequent studies (Braun & Clarke, 2013).

Future studies could directly examine links between veterinary teaching of grief management and competency in new graduates. Another aspect to consider is whether the material educators are reporting as having been taught is, in fact, consistent with what students are learning during their veterinary program. On the one hand, students should be learning skills they will require as a veterinary professional, but on the other, they are in a program for three to five years where the emphasis is on assessment and grades being awarded. This adds to the 'hidden

curriculum' in veterinary education (Gibbs & Simpson, 2005; Sambell & McDowell, 1998) whereby students place greater emphasis on studying topics that are heavily assessed than those that are not. Examining the way in which aspects of EoL management, including grief management, are assessed may better inform the development of veterinary competency in these important areas of clinical practice.

There are many more topics that need to be covered in a veterinary curriculum on grief management (e.g., potential role of the veterinarian, what to do during a euthanasia consultation, supporting owner decisions, and offering ongoing support to grieving clients and veterinarians). Grief is not exclusive to companion animal clients, as livestock owners and those that work with avian/wildlife are also affected by grief, albeit in a different way (Chur-Hansen, 2010; Peck, 2005; Yeung et al., 2017). A more robust EoL management curriculum that includes aspects of a range of potential euthanasia techniques (Littlewood et al., 2018), EoL decision-making (Littlewood et al., 2019), and grief management is likely to increase client happiness, and job satisfaction and professional satisfaction for the whole veterinary team.

6.6. References

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CHAPTER 7: Cat owner perspectives



“What would you do?”: How cat owners make end-of-life decisions and implications for veterinary-client interactions

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Results are presented in the style of the journal, and some of the Methods section is similar to that of **Chapter 3**.

7.1. Simple summary

Cats are the most popular companion animals in New Zealand. Many owners form close relationships with their cats and these relationships, along with other factors in cat owners' lives, make end-of-life decisions complicated. Veterinarians can help make owners' end-of-life decisions easier if they understand the personal factors impacting such decision-making. We set out to explore how owners of older and chronically ill cats make end-of-life decisions in New Zealand and the role their veterinarian plays in the process. We interviewed cat owners who had recently had their cat euthanized. Cat owners mentioned nine areas of concern. Four were animal-centered concerns: cat behavior change, pain, signs of ageing, and the benefits of having an outside perspective. Five were human-centered concerns: veterinarians understanding owners' relationships with their cat, normalizing death, the need for a good vet to manage end-of-life, veterinary validation that owners were doing the right thing, and a desire to predict the time course and outcome for their cat. End-of-life decision-making is complex, and the veterinarian's role is often poorly defined. Our owners appreciated the expertise and validation their veterinarian provided.

7.2. Abstract

Cats are the most common companion animals in New Zealand. Advances in veterinary care means that cats are living longer and there are many older cats. End-of-life decisions about cats are complicated by owner-cat relationships and other psychosocial factors. Our study explored the ways in which end-of-life decisions were being made by owners of older and chronically ill cats in New Zealand and the role of their veterinarian in the process. Qualitative data were gathered via retrospective semi-structured interviews with 14 cat owners using open-ended questions. Transcripts of these interviews were explored for themes using Template Analysis and nine themes were identified. Four animal-centered themes: cat behavior change, pain was a bad sign, signs of ageing are not good, and the benefits of having other people see what owners often could not, were identified. Five human-centered themes were identified: veterinarians understanding owners' relationships with their cat, normalizing death, the need for a good veterinarian to manage end-of-life, veterinary validation that owners were doing the right thing, and a strong desire to predict the time course and outcome for their cat. End-of-life decision-making is complex, and the veterinarian's role is often poorly defined. Our owners appreciated the expertise and validation their veterinarian provided but continuity of care was important. Future research aimed at exploring the veterinarian's perspective during end-of-life decision-making for cats would be a valuable addition to the topic.

7.3. Introduction

Cats have become increasingly popular companions (Rodan, 2010), and are the most common companion animal (CA) in New Zealand (Anonymous, 2020). The increase in cat numbers may be due to some changes in human lifestyle which restrict the keeping of dogs (e.g., renting properties). In addition, as veterinary care available for cats has improved, many cats are living longer (Bonnett & Egenvall, 2010; Egenvall et al., 2009). This has led to an increase in the number of old cats (Anonymous, 2020; Gardiner, 2014; Ormerod, 2008). Coupled with a life-expectancy that exceeds that of most dog breeds and a propensity to develop chronic diseases in older age (O'Neill et al., 2013, 2015), older cat welfare is a pressing concern.

Decisions about how the end of animals' lives should be managed are an important influence on animal welfare. The process of decision-making about cat euthanasia is a component of end-of-life (EoL) management, alongside managing the euthanasia process itself and grief, and often involves the veterinarian in consultation with the animal's owner. Knowledge of how owners make EoL decisions for their cats, and the role of their veterinarian in the process, is important for the animal, veterinarian, and client. It is essential for good animal welfare that the cat is killed using a properly applied, humane method within an appropriate timeframe, to minimize suffering (Leary et al., 2020).

For the veterinarian and their profession, there are personal, economic, and reputational implications that may influence whether a client returns to the practice following the euthanasia (Anonymous, 2011, 2012, n.d.; Brockman et al., 2008; Shaw & Lagoni, 2007; Wensley, 2008). Veterinary medicine, in contrast to the majority of human medicine practice, allows for, and often encourages, euthanasia as an option for EoL management (Leary et al., 2020). The definition of euthanasia typically encompasses both the application of a technique which minimises suffering and killing being performed for the animal's benefit (Leary et al., 2020; Persson et al., 2020). The New Zealand Code of Professional Conduct for Veterinarians expressly mentions the 'duty' of veterinarians 'to protect animal welfare and alleviate animal suffering' (Anonymous, 2011). In addition, carrying out a job 'well' also engenders a sense of pride that contributes to workplace satisfaction (Sanders, 1995; Wright & Bonett, 2007), which in turn is important for personal wellbeing (Black et al., 2011; Cake et al., 2016; Morris, 2012). Accordingly, competency in EoL management is expected of veterinarians, and directly benefits veterinarians and their profession (Anonymous, 2011).

In Western jurisdictions, animals are considered the property of their owners, for example, in The New Zealand Animal Welfare Act 1999 (Anonymous, 1999). This has implications for EoL management because the owner is legally entitled to decide if and when to end the life of their animal. The EoL process, and how it is managed by the attending veterinarian, can also affect owners (Adams et al., 1999; Hart et al., 1990; Martin et al., 2004). Cat owners may experience profound grief

over the loss of their cat, and anticipatory grief can result in delayed euthanasia (Brockman et al., 2008; Fernandez-Mehler et al., 2013; Hewson, 2014). Owners may also experience guilt before and after euthanizing their cat (Bussolari et al., 2018; Spitznagel et al., 2020). Veterinarians need to understand these and other psychosocial factors to communicate effectively with clients during the EoL process (Marchitelli et al., 2020; Spitznagel et al., 2020). Negative experiences with veterinarians during EoL management may result in the client telling family and friends about their grievances or, in extreme circumstances, taking the matter further and making a formal complaint to the relevant veterinary regulatory authority (Stewart, 1999). Conversely, veterinarians who are able to understand their clients' perspectives and how their decisions are made will be best placed to help them come to a decision that benefits all three parties: veterinarian, client, and cat.

Previous studies have reported a number of factors that are key to owners' EoL decisions but the way the data were collected and analyzed may not represent owners' holistic experiences of the process and their interactions with veterinarians. For example, factors identified from previous research include: the animal's quality of life (QoL), the owner's finances, time and other resources, and their attachment to their cat (Goldberg, 2016; Kemp et al., 2016; Tannenbaum, 1993; Tinga et al., 2001). Many of the factors in other previous studies were identified via 'expert' consensus (e.g. Heuberger et al., 2016), or used in surveys (e.g. Spitznagel et al., 2020; Williams et al., 2017), therefore, the information

collected may not reflect owner perceptions but expert consensus, or has been limited to quantitative data via surveys or structured interviews. For example, Slater et al. (1996) interviewed owners of cats with cancer before and after a euthanasia decision. However, their interviews were structured and the resulting quantitative data were analysed via logistic regression (Slater et al., 1996). The problem with collecting quantitative data to explore owner EoL decision-making is that it uses a deductive approach. Participants are given pre-conceived options to choose from by the researchers, rather than being given the opportunity to express their own ideas. Methods to collect qualitative data may address some of these limitations.

The few studies that used open-ended inductive (exploratory) methods to collect qualitative data found a number of factors important to owners facing the death of their CA. For example, in a study analysing narratives written by Finnish CA owners about their experiences with animal death, Schuurman (Schuurman, 2017), found the euthanasia location, grief experiences, and how the animal perceived the euthanasia were important to owners. Schuurman (2017)'s study is limited as it relies on unidirectional information transfer and lacks the in-depth and back-and-forth discussion inherent in interview-based research. Christiansen et al. (2016; 2013) used interviews to collect prospective qualitative data from owners considering treatment or euthanasia of their chronically ill or aged dogs. They found that decision-making was more challenging for dog owners if their dog appeared normal or deteriorated slowly, they were unable to clearly assess their

dog's QoL, or if owners had conflicting concerns (e.g., prioritising owner versus dog, or quantity versus quality of life). The veterinarian's role in decision-making also varied by client and was dependent on owner preferences for veterinary involvement (Christiansen et al., 2016). Christiansen et al. (2016)'s focus was on the veterinarian's role in the process, as perceived by their client, and they did not ask questions about how owners made the decision. They also never explicitly asked owners how they assessed the QoL of their dog (Christiansen et al., 2016). Stoewen et al. (2014; 2019) also interviewed dog owners, rather than cats. Their participants were clients seeking cancer treatment and wanted to be given honest and detailed information about their dog. This information allowed their participants to trust their veterinarian enough to engage in treatment and be prepared for the future, while also engendering a sense of control to the situation.

Retrospective interviews with CA owners have tended to focus on the grief experience, rather than the EoL decision-making process (e.g. Dawson & Campbell, 2009; Wong et al., 2017). Additionally, the focus of previous work has been on CAs in general (e.g. Dawson & Campbell, 2009; Wong et al., 2017), or dogs in particular (Christiansen et al., 2013; 2016; Stoewen et al., 2019; Stoewen et al., 2014a; 2014b). Very few studies have focused explicitly on EoL decision-making for felines (Reynolds, 2010), and none have done so using a retrospective exploratory methodology in the form of in-person client interviews. To begin to bridge the gaps in existing knowledge, an inductive methodology using interviews to gather qualitative data was used in this research. The process of EoL decision-making is

fraught with challenges and many potentially complicating factors exist. Therefore, it follows that qualitative data best reflect the essence of the decision-making process for cat owners (Bloomberg & Volpe, 2016; Braun & Clarke, 2013).

The aim of this study was to explore the ways in which EoL decisions were made by owners of older and chronically ill cats in New Zealand and the role of their veterinarian in the process. The potential outcomes of this study are a more formal understanding of cat owner EoL decision-making and owner-veterinarian interactions.

7.4. Materials and Methods

Rationale for research approach

This research is grounded in a constructivist epistemological position, that is, it seeks to examine a particular social situation and achieve a holistic understanding of others' experiences (Bloomberg & Volpe, 2016; Crotty, 1998). This is in contrast to the quantitative, hypothesis-driven approach used to explore this topic by previous researchers which may have limited our understanding of this complex situation by excluding an exploratory methodology. This social science approach is more likely to produce the rich data needed to address the aims of this research.

We recognise that knowledge reflects our perspectives as researchers and cannot be separated from this to create 'objective' data. Thus, we acknowledge that the information obtained here has been formed as a result of the research process and

that we have had an active role in creating it (Bloomberg & Volpe, 2016; Curtis & Curtis, 2011; Maxwell, 2009).

As veterinarians and cat owners, the first and third authors have personal experience of some of the beliefs and practices explored in this project. We have taken an inductivist (theory building) approach to collecting and analysing the data; it was our intention to draw conclusions from the data and explore alternative reasoning, rather than test pre-conceived theory (Burnard et al., 2008; Crotty, 1998; Curtis & Curtis, 2011).

Study design

The research project was reviewed and approved by the Massey University Human Ethics Committee Southern B, Application 16/43. Over a 7-month period (May to December 2018) interviews were conducted with New Zealand cat owners who had recently had their cats euthanized. Participants were recruited via social media advertising and provided written consent to participate in the study.

At the time of recruitment, potential interviewees were asked to complete an online recruitment questionnaire via Qualtrics survey software. The recruitment criteria for inclusion in the study were that the individuals lived in New Zealand, were over 18 years of age, had made the decision to euthanize their own cat within the last 6 months, agreed to us interviewing the veterinarian involved in the euthanasia of their cat, and provided contact details for themselves and their

veterinarian. Additional information collected in the recruitment questionnaire included the cat owner's location in New Zealand, when their cat was euthanized, why the euthanasia was performed and location of their veterinarian. Owner demographic information collected included age range, ethnic group, and gender. Purposive sampling (Braun & Clarke, 2013; Maxwell, 2009; Polkinghorne, 2005) was then used to select owner participants who had had their cat euthanized within the last 3 months. Convenience sampling (Braun & Clarke, 2013) was also used to select participants who were located in proximity to one another to facilitate the in-person interviews.

The number of owners interviewed was dictated by theme saturation. That is, we continued to interview owners until no new information was being mentioned. This resulted in 14 interviews.

Interview structure

The first author undertook semi-structured single interviews with cat owners to explore how EoL decisions were made and how the process of euthanasia was managed. The role of the veterinarian was also explored. Interviews followed open-ended questions from an interview guide (**Appendix VIII**). The questions were not made available to participants before their interview. The interview approach was conversational and relaxed, with follow-up questions and discussion. Interviews were digitally audio recorded, transcribed intelligent verbatim by a professional transcriptionist, and reviewed by the first author to ensure quality and accuracy.

The names of owners, veterinarians, and veterinary clinics were replaced with numeric (e.g., 'owner 1') or other non-identifiable descriptors (e.g., 'veterinary clinic') for the purposes of data reporting.

Data analysis

Transcripts were explored for themes using Template Analysis in NVivo qualitative analysis software (Bazeley & Jackson, 2013; Brooks et al., 2015; King, 2012). Template analysis is a highly structured form of thematic analysis which emphasises hierarchical coding and the development of a coding template (Brooks et al., 2015). This coding template is created using a subset of data, applied to further data, revised and refined. However, template analysis retains the flexibility to adapt to the needs of a study (Brooks et al., 2015; King, 2012). An example of this flexibility occurs when a template of preliminary codes is developed from initial interview transcripts, but these codes and their relationship to each other change as subsequent transcripts are analysed. Open coding was used first; codes were created for interviewee comments that reflected their own words (Mills et al., 2012). During an iterative reflective process, these codes were converted into themes that reflected the meaning behind interviewees' words and relationships between themes.

Terminology

Animal welfare status reflects overall wellbeing and is used to describe the mental state within an animal and the sum of their total experiences (Duncan, 1996; Fraser

et al., 1997; Mellor, 2012). QoL and animal welfare status are largely thought of as synonymous terms (Fraser et al., 1997; Green & Mellor, 2011; McMillan, 2000). We have used QoL throughout this article as it tends to be more easily understood by lay animal carers and reflects the vocabulary used by our participants (McMillan, 2000).

7.5. Results

The final thematic template with high-level themes is presented in **Table 7.1**. There were two main categories of themes relating to considerations when owners decided to end the life of their cat: animal-centered and human-centered. Animal-centered themes were focused on the cat itself and how owners judged its QoL. Human-centered themes included considerations of all humans in the cat's and owner's life such as the veterinarian, family, and friends. The integrative theme of 'prognosis' was an aspect of many of the themes and reflected a need for the owner to predict what would happen to their cat.

In the section that follows, direct quotes from owners are in italics. Square brackets are additional words inserted by the authors to clarify the meaning of a quotation. Punctuation has also been added to help the reader. A set of three periods indicates where filler words have been removed from the quotation.

Table 7.1 Final template for owner interview themes

1. ANIMAL-CENTERED THEMES
<p>1.1 My cat's behavior changed</p> <p>1.1.1 Eating behavior changed</p> <p>1.1.1.1 Cat was eating and drinking</p> <p>1.1.1.2 Cat went off food</p> <p>1.1.1.3 Cat was encouraged or forced to eat</p> <p>1.1.1.4 Cat was always hungry</p> <p>1.1.1.5 Cat lost weight</p> <p>1.1.2 Cat's interactions changed</p> <p>1.1.2.1 Cat's interactions with its surroundings changed</p> <p>1.1.2.2 Cat's interactions with other animals changed</p> <p>1.1.2.3 Cat's interactions with humans changed</p> <p>1.2 Pain was bad for my cat</p> <p>1.2.1 Pain is important</p> <p>1.2.2 Cat had signs of arthritis</p> <p>1.2.3 Cat was given analgesia</p> <p>1.2.4 The non-painful cat</p> <p>1.3 Signs of ageing in cats are not good</p> <p>1.3.1 Cat had poor coat quality or body condition</p> <p>1.3.2 Cat had signs of cognitive decline</p> <p>1.3.3 Young cat 'aged' quickly when sick</p> <p>1.3.4 Cat had disease of old cats</p> <p>1.3.5 Young at heart</p> <p>1.4 Other people could see what I could not</p> <p>1.4.1 Owner discussed cat with other people</p> <p>1.4.2 Other people noticed cat's condition</p>
2. HUMAN-CENTERED THEMES
<p>2.1 Understand my relationship with my cat</p> <p>2.1.1 Owner was dedicated to cat</p>

2.1.1.1 Owner put animal's interests first

2.1.1.2 Owner felt deep connection with animals

2.1.2 Owner had casual relationship with cat

2.1.2.1 Owner was not as close to this cat as others

2.1.2.2 Owner euthanized cat earlier for own benefit

2.1.2.3 Cat needed more care than owner could offer

2.1.3 Owner felt their veterinarian understood their relationship with cat

2.2 Death is normal

2.2.1 Death is normal

2.2.1.1 Death is natural

2.2.1.2 Owner was prepared for cat's death

2.2.1.3 Owner had experience with animal death

2.2.2 Death is a kindness

2.2.3 Death is difficult and final

2.2.3.1 Owner did not want to give up on cat

2.2.3.2 Owner delayed euthanasia for own benefit

2.2.3.3 Owner struggled with euthanasia event

2.2.3.4 Cat had 'The Big C' [cancer]

2.2.3.5 Euthanasia is owner's decision to make

2.2.3.6 Others had different thoughts about animal death

2.2.4 Death can be dignified

2.2.4.1 Owner compared animal and human death

2.2.4.2 Owner brings up family member loss

2.2.4.3 Cat's euthanasia was 'good'

2.3 I need a good vet

2.3.1 Owner thought their veterinarian was a good vet

2.3.1.1 Owner knew veterinarian well

2.3.1.2 Vet genuinely cared

2.3.1.3 Vet had good relationship with cat

2.3.2 Owner was not happy with veterinarian

2.3.2.1 Vet was inexperienced

2.3.2.2 Vet's values did not align with owner's

2.3.2.3 Vet's opinion about euthanasia differed to owner's

2.3.3 Different veterinarians made it harder for owner

2.3.4 Veterinarians can help owners grieve

2.3.4.1 Vets need training in psychology

2.3.4.2 Vet's actions helped owner grieve

2.3.5 Owners expect veterinarians to be good at euthanasia

2.4 Tell me I am doing the right thing

2.4.1 Veterinarian validated owner's decision

2.4.1.1 Vet agreed with owner's euthanasia decision

2.4.1.2 Vet is expert or professional

2.4.2 Veterinarian guided owner towards euthanizing cat

2.4.2.1 Decision-making was shared with vet

2.4.2.2 Vet used subtle comments to encourage euthanasia

2.4.2.3 Vet prepared owner for worst

2.4.2.4 Vet told owner to euthanize cat

2.4.3 Veterinarian gave owner options

2.4.3.1 Vet gave owner treatment options

2.4.4 Veterinarian dissuaded owner

2.4.5 Veterinarian was confused or had no role in decision-making

2.4.5.1 Owner made euthanasia decision before seeing vet

2.4.5.2 Vet did not tell owner to euthanize

2.4.5.3 Vet was unsure of their role

2.5 Tell me what will happen

2.5.1 Owners were tracking cat's progress

2.5.1.1 Owner was recording information about cat

2.5.1.2 Owner was hopeful cat would improve

2.5.1.3 Cat deteriorated

2.5.2 What would you do?

- 2.5.2.1 Owners wanted their vet to be honest
- 2.5.2.2 Unclear expectations were difficult for owner
- 2.5.2.3 Vet did not tell owner what to expect with cat

3. PROGNOSIS (INTEGRATIVE THEME)

Animal-centered themes

The four animal-centered themes (**Table 7.1**) identified from the data related to: cat behavior change, pain, signs of ageing, and the benefits of having other people see what owners often could not. Briefly, owners often mentioned their cat's eating habits and other changes in their behavior. Food-related behaviors were clearly visible to owners, whereas judgements about pain were challenging for them. It was important to owners that their cat be pain free, but they found pain difficult to recognize. Owners also struggled to distinguish normal ageing from a decline in QoL that represented a need for euthanasia.

My cat's behavior changed

Cat owners described a range of eating behaviors and focused on them throughout our discussions. Most owners found their cat went off food towards the end of its life. When a cat went off its favorite food, a euthanasia decision soon followed. Owners were encouraging their cats to eat by the use of an appetite stimulant, hand feeding, giving them their favorite foods and treats, or by offering a range of options. A few owners resorted to forcing their cat to eat, particularly if they had not eaten for some time:

"Which I didn't mind doing for the greater good if he was gonna pick up and come round. But that went on for several weeks and he was getting worse and worse and fighting me...in the end it becomes torture."

In addition to changes in feeding behavior, most owners noticed that their cat had lost weight. This could have been despite the cat eating adequate or plentiful food. However, more often, the weight loss was related to lost appetite, despite the owner's best efforts to encourage eating.

Most owners also saw a reduction in overall activity in their cat. Cats spent more time in bed sleeping, or were just generally moving less:

"...we would go to work and come home, and he would probably be in the same spot and he might get up for dinner?"

Some cats were toileting in inappropriate locations such as in their own bed, areas in the home, or sometimes on the owner. Some cats stopped seeking their owner's attention and did not want to be picked up, while others sought out their owners more:

"And he wanted to be with you all the time. So, every time you sat down, you'd end up [with] a cat on your lap...And he'd stay there for hours if he could so [he] obviously didn't feel very well."

Cats also communicated with owners differently; some became quiet, stopped purring, or held their tail down. Some cats vocalized more as they aged or became sick:

"Towards the end he was really, really yowly. He...didn't understand that he'd only been fed...ten minutes ago...he wasn't there, and he was miserable."

Conversely, if their cat's behavior had not changed, despite its age or serious disease, this was encouraging for most owners. Cats that were playing normally, hunting, purring, or still friendly towards their owners were perceived to be faring well. Once this changed, EoL decisions were not far behind. A behavior change, and particularly reduced appetite or inappropriate toileting behaviors, represented a poor prognosis for cats in the eyes of their owners.

Pain was bad for my cat

Owners recognized that being pain-free was an important aspect of quality of life, however, it became apparent that, while the presence of pain was important for EoL decisions, signs of pain were poorly recognized by owners. This created a tension between what owners' thought was important, and represented a poor prognosis, and what they were seeing in their own cat:

"...if I'd have thought he was in real pain I would really have done something a lot sooner"

Many owners mentioned behaviors that were indicative of arthritis, such as stiffness around the back end, and linked these behaviors to pain experiences for their cat. However, it was not always clear whether they had made this link themselves or had been told their cat was arthritic by their veterinarian. A third of cats were given analgesia, and for most cats this was initiated by their veterinarian, rather than by the owner themselves:

"...this is the point at which we...really should think about putting him down and we took him to the vet...and they said 'oh! no no it's just it's just a bit of...pain' we gave him an injection of...pain killer and he perked up."

Signs of ageing in cats are not good

Owners did not think their cat's age impacted on their decision to end its life; however, signs of ageing were perceived negatively by the owners we spoke with:

"He was actually still really, really good. He slept a bit more and that was about it. But he didn't really start acting old for a long, long time"

And one of the younger cats in the study was negatively described as 'ageing' by comparing to an older cat they used to have:

"...we just saw her grow into this really old cat very quickly over a matter of weeks..."

Owners often linked 'ageing', whether real or imagined, to poor coat quality, body condition, or senility, for example:

"...he was getting skinnier and skinnier and you know how old cats get."

Conversely, if an older cat was still playing normally, they were described to be young at heart:

"Well I was utterly outraged the first time I took [my cat] to the vet and they declared that he was geriatric. Cause he was still running around like a kitten and stuff. He was a very young old cat until...right up to the end"

Seven of the 13 cats in our study had been diagnosed with (or owners were under the impression they had) one or more diseases commonly found in older cats, for example, their kidneys or thyroid gland were poorly functioning.

Other people could see what I could not

Owners found it hard to detect changes in their cat if they deteriorated slowly. This added an element of uncertainty about the cat's prognosis. One owner emphasized the importance of another person's fresh perspective:

"Because when you live with something you don't notice the changes as much, so it was [daughter name]'s comments more than anything I think."

Owners perceptions of chronicity were not always accurate and deteriorations in their cat were often hard for owners to see when it was a slow decline:

"I was talking to my husband because I was just like 'oh it's so quick'. But he was like 'well actually if you think back it was a bit gradual'"

Often it was this slow decline that made it hard to make an EoL decision or know when to draw the line on the cat's life. And a fresh set of eyes, from someone who had not seen the cat recently, helped with evaluating how they are doing:

"I don't see it because I'm living with it every day. So, it was the gradual deterioration that when my friend [friend name] came and she saw the change...I just hadn't noticed...It had kind of crept up on me..."

Human-centered themes

Owners conveyed five over-arching human-centered themes (**Table 7.1**) relating to: veterinarians understanding owners' relationships with their cats, normalizing death, the need for a good vet to manage EoL, veterinary validation that owners were doing the right thing, and a strong desire to predict the time course and outcome for their cat.

Understand my relationship with my cat

The majority of owners were very dedicated to their cat. They put their animal's interests first and felt a deep connection with the cat to the extent that they described their cat as a member of their family or a friend. More than a third of the cat owners I spoke to referred to their cats as children. One owner described herself as a stay-at-home parent. She worked from home to be with her "children". It wasn't until 20 minutes into the interview that I realized the children she was referring to were her cats. Her positive view of her veterinarian was the result of him

understanding the value she placed on her cats, her relationship with them, and her personal circumstances:

"I felt that he genuinely cared. And I felt that he genuinely wanted the best thing...I wasn't another file. I felt that it was he genuinely wanted the best interests of my child"

This was in contrast to a previous veterinarian who had not understood this close parent-child relationship between owner and cat.

There was obvious overlap between how owners perceived their cats, particularly as family members or children, and their responsibility to animals. For example, owners mentioned that they were willing *"to do what it costs"* for their cat, that the animal should come first, and that *"animals are forever"*.

Generally, our participants were dedicated cat owners. It was challenging for them when other people in their lives did not understand this relationship. Comments from others reflected a different value placed on cats:

"My brother would go 'it's just a bloody cat'...And I went off my nut at him once about that when he said 'it's just a cat what are you worried about just get another one'...It's like you know what my cats mean to me they are my children and I don't care that to you it's just an animal"

Comments like this one, about the owner's relationship with their cat, made owners reflect on the support they received:

"So, you're not able to seek that support externally because other people don't understand the relationship that you have with your animal"

In other words, there was an expectation for support and acknowledgement of grief following the euthanasia by friends and family, despite them not feeling the same way about animals as companions or members of the family.

Three of the owners were diagnosed with cancer prior to or at the time of their cat's euthanasia. This significantly changed the owner's relationship with their cat and so influenced the cat's life at the end. Owners recuperating from their own treatments at home with their cat reported becoming very attached to them and coming to rely on their company. Taking care of their cats often gave owners something to do or think about to distract from their own situation:

"Cause I'm off work at the moment now with my own illness. So, I'd just spend the day looking after him and feeding him. Trying to hand feed him just constantly...So the two of us just spend the day recuperating. So, he'd come and snuggle on the chair with me."

These owners felt a deep connection with their cat as a result of this shared experience, with the effect of making the EoL decision much more difficult for them. One owner was undergoing chemotherapy treatment for terminal cancer

herself at the time of her cat's decline and this personal experience affected her choices. Delaying her cat's euthanasia was viewed as a way of delaying more loss in a family who were already grieving for her:

"...there's too much death in the household...If it had been the previous year, I would have done it earlier rather than later...I just wasn't strong enough. Neither of us were. It was just too hard"

In contrast to these dedicated owners, some owners had a casual relationship with animals, or this cat in particular. They may not have been as close to this cat as others they had owned, or they chose to euthanize this cat earlier than they may otherwise have for their own perceived benefit.

Death is normal

The owner's attitude to, and experience with, death also influenced their decision to end their cat's life. Death was normalized by owners and was described as natural by one owner:

"...there's nothing yucky about it. There's no blood there's no gore. It seems very natural. As natural as you can possible make it."

Other owners normalized death for their children by involving them in the cat's death. Most owners believed death was a kindness for animals because they spoke about death and killing as "humane" or "the kindest thing". For many owners, they

rationalized the decision to end the life of their cat by not wanting to see them suffering:

"The main deciding factor was that...I didn't want him to suffer. And it wasn't fair on him at all...I wasn't going to keep him alive for us. Cause that's so not fair. And I just looked at him and we thought you're not happy"

One owner felt the cat took the decision out of their hands, that there was no point in keeping the cat alive, and that the decision had to be made as soon as possible:

"I was in denial for quite a bit. And then when it got kind of obvious...It wasn't a hard decision. It wasn't a decision at all really"

Once experienced, this feeling of not having any other choice helped owners make the decision to end their cat's life *"I think it's maybe easier when it's obvious that they're not living as well as they have been"*. Owners did not want to prolong the life of their cats unnecessarily *"better a week too early than a day too late"* and felt that euthanasia was part of the responsibility of having an animal.

"You know where you're going with this and you know that it's not recoverable. You know that it's only gonna get worse. You just have to decide where on the slope [of QoL decline] you make the decision."

Owners compared death of animals with death of humans, and particularly loved ones who they had watched suffer while dying. Many owners thought that death

could be dignified. A third of owners were upset that they could make the decision to end the life of their cat but had to watch human loved ones suffer while dying:

"It's not a nice process but I wish that I could have done that to my mother...So I think it's interesting how we can give animals an ending that I would wish that on the people that I love the most...I would want someone to put me out of my suffering"

"...you just don't want to have to make that decision. But at the end of the day you've got to make it for them...That's the thing we can do that for our animals, but we can't do that for our people..."

Despite normalizing death, two thirds of owners had difficulty facing their cat's death. They did not want to give up on their cat and wonder 'what if' they recovered. This was particularly problematic if the prognosis for their cat was unclear. As a result, these owners gave their cat a chance or kept them comfortable until they could make a decision.

I need a good vet

Owners' opinions of their veterinarian were important for how they related to them and how the veterinarian helped with EoL decision-making. Most owners knew their veterinarian well because they considered them to be a 'good vet' and so had returned to them many times. Other things that made their veterinarian good in the owner's eyes were if they felt their veterinarian understood them or

genuinely cared. Veterinary empathy resulted in a trusting relationship between owner and veterinarian:

“Oh her opinion is probably the only one I would listen to on the welfare of my cats because I trust her to have their best interests at heart...My vet is not in it for the money, my vet’s in it for the animals...I have had dealings with other vets here that were not particularly good. And that was the catalyst that made me put more of my trust in this particular vet. And having known her and grown a relationship”

Owners also highly valued their veterinarian’s relationship with their cat and described their veterinarian positively if they appeared to get along with their cat. Owners were also clear that it was their choice whether to euthanize their cat or not, but others did play a role in the decision-making process. Owners were not happy with their veterinarian if their values or opinion about euthanasia did not align with their own, or if they came across as inexperienced; by referring to their notes too much or otherwise appearing like they did not know what they were doing.

Seeing different veterinarians for problems with the same animal made the decision-making process harder for owners. Not only did they not have that close relationship with the veterinarian, but they also had to relate to them all differently and explain the cat’s condition over again to different people. Thus, continuity of care was important to owners and many of them insisted on seeing the same

veterinarian each time or found a clinic where they saw only one veterinarian. However, some owners were not aware that they could request a certain veterinarian, and without being offered the choice, they took what they were given:

“...they don’t often ask me when I ring up for an appointment ‘oh which vet do you want?’. It’s basically if you want an appointment at this time or this day you basically get who you get”

According to owners, veterinarians could help them grieve by their actions or interactions. Sending cards or flowers after the loss of their cat was a small action that greatly impacted owners. Many owners wanted veterinarians to have a role in dealing with their grief. Training to deal with grieving clients, understanding their clients, better communications skills, and compassion fatigue training were variously mentioned by owners as ways that veterinarians could better deal with owners following pet loss:

“I think it’s not just medical and professional management of the animal. There’s also an element of social worker in there because you’re dealing with a grieving owner who can possibly get upset or angry”

Owners also expected veterinarians to be good at performing euthanasia. They felt the veterinarian should be familiar with the euthanasia procedure, have seen euthanasias before, be able to perform euthanasia smoothly, know what to do if things go wrong, and be supervised if still learning:

“But my expectation is that I would be open to someone learning but they would have to be adequately supervised so that would mean there would have to be two people there. Like I wouldn’t expect to go under the scalpel of an inexperienced surgeon...”

Tell me I am doing the right thing

The veterinarian’s opinion about their cat’s prognosis was important to owners. The most important role the veterinarian had in the minds of the owners we spoke with was one of validation. One owner articulated this role perfectly when she told us she already knew what her veterinarian was going to say when asked, but that she was just reaching out for a second opinion on doing the right thing:

“I think you go to your vet because, even though in your heart you know, you still want the professional to agree with you”

Owners appreciated this validation, and it often helped with the grieving process to hear that the veterinarian, as the expert or professional, agreed with them:

“...as soon as he saw him, he was just like ‘no you’ve done the exact right thing’. And he said it and that helped...that really really helped you know to kind of validate it”

Even if they did not validate their decision, their veterinarian’s opinion was important to owners as they were the expert or professional in this situation:

“...you’re with a professional to get their professional opinion. What you do with it is your decision to make...The reason why you’re there is because you want that expert opinion”

Other roles taken by veterinarians were guiding owners towards euthanizing their cat by using subtle comments to encourage euthanasia (e.g., asking owner to think about what is best for cat or talking about doing the right thing), preparing owners for the worst by discussing the cat’s compromised QoL, or explicitly telling the owner to euthanize their cat.

Tell me what will happen

Because we were talking to owners about the whole process leading up to the euthanasia of their cat, they mentioned times when they did not necessarily see death as the outcome. Owners struggled if the outcome for their cat was unclear or unpredictable. They were unable to process not knowing how long their cat had to live, or what they might go through towards the end of their life. As a result of this underlying difficulty, owners asked their veterinarian how much longer their cat had or consulted the internet for advice on their cat's condition:

"I'd gotten, as you do, Dr Google. I'd gotten online and started googling you know 'latest stages of renal failure'...I found a really good article..."

One owner was not aware her cat's condition was terminal until near the very end of its life and at least half of the owners we spoke with were hopeful their cat would improve:

"So the last kind of 24 to 48 hours were like last ditch efforts you know...And it was like if none of this works that's it...So I left him overnight to see if he'd pick up and he just didn't"

A number of owners appreciated honesty from their veterinarian and asked the question: *"if it was your cat what would you do?"*. This owner respected her veterinarian for directly answering her question:

"And she will bluntly tell us...A spade's a spade with her '...I can't guarantee that the reconstruction surgery is going to fix him. To be perfectly honest I would put him to sleep because he's not really going to have a very good life, even if we do manage to keep him alive'..."

Knowing what would happen to their cat was important for owners, and veterinarians who were honest with them were perceived as good veterinarians. Without this knowledge, owners were lost and many of them resorted to asking "Dr Google".

7.6. Discussion

Ending the life of an animal is difficult for many owners. When that animal is a beloved family member, the owner's decision is not taken lightly, and there are

additional considerations for veterinarians to make. In this study, owner considerations when making the decision to end the life of their cat were grouped under two main themes: animal-centered and human-centered. Each theme will be discussed alongside the veterinarian's role, real or potential, in helping owners deal with their concerns.

Animal-centered themes

When they explicitly focused on their animal, cat owners described their cat's behavior and physical appearance. Weight loss was perceived as a bad sign by owners and it accelerated their decision. When their cat went off their favorite food, an EoL decision closely followed.

Changes in weight and appetite are important considerations in QoL assessment protocols, and particularly in those designed for EoL decision-making (e.g. Hilst, 2013; Villalobos & Kaplan, 2007). There are a number of QoL assessment tools available for owners and veterinarians to use including those designed for use with dogs and cats (e.g. Dawson et al., 2018; Lynch et al., 2010) and those specific to cats (e.g. Freeman et al., 2016; Tatlock et al., 2017).

Weight loss is a robust indicator of an animal's nutritional status (Morton, 1985). Therefore, it follows that it played a significant role in decision-making for our owners. It is also measurable and quantifiable – both of which help when making

difficult decisions such as ending the life of an animal. Appetite can also be easily observed by owners and is quantifiable in cats fed in a controlled manner (e.g., indoor-only). However, weight loss does not always accurately reflect welfare status (McMillan, 2000), and it can be challenging for owners to quantify without ready access to a scale. Appetite is also difficult to measure when cats have outdoor-access and are free to eat indiscriminately, as is the case for most New Zealand cats (Anonymous, 2020).

Repeated measures of a cat's weight over time and discussion of appetite can help owners and veterinarians assess QoL (Main, 2007; Yeates & Main, 2009). Multi-buy deals for weigh-ins and visits with a nurse technician to discuss feline QoL, with follow-up appointments with a veterinarian, could help. These visits could be offered from the start of an animal's life or begin when the animal is diagnosed with a terminal illness or falls into the 'geriatric' category. This assistance could have the added benefit of veterinary professionals being perceived as 'good vets' and help 'tell [owners] what will happen'. Problems may arise with cats that have a negative association with the veterinary clinic, or whose owner perceives that they do. These cats could be counter-conditioned to veterinary visits or offered a home visit (Halls, 2018). The recent upsurge in mobile veterinary practices could help improve feline veterinary care in this regard (Dickinson & Hoffmann, 2019; Goldberg, 2016; Heuberger et al., 2016; Heuberger & Pierce, 2017; Hewson, 2015).

Pain or signs of ageing were perceived to be bad for cats, but owners grappled with how to evaluate pain and how to distinguish normal ageing from poor QoL. Pain

also features in QoL assessment protocols, and particularly in those designed for EoL decisions (e.g. Hilst, 2013; Villalobos & Kaplan, 2007). For example, one such protocol assigns low “Ouch or Pain” 10 of the available 80 QoL assessment points towards “a healthy and happy pet” (Hilst, 2013).

Pain is often framed as being treatable and only intractable pain warrants euthanasia (Hilst, 2013; Hurn & Badman-King, 2019; Villalobos & Kaplan, 2007). However, at least two problems arise from this stance: (1) it ignores positive life experiences and the potential for analgesia to impact on these, that is, via sedation or other side-effects impacting the animal’s QoL; and (2) pain is often poorly recognized. In common with the owners in our study, other authors have reported that, despite numerous pain-specific assessment protocols available (e.g. Calvo et al., 2014; Finka, 2019; Reid et al., 2007), pain in cats is often difficult to assess (Folger et al., 2012; Robertson, 2005a, 2005b). Above all, pain and its management at the end of animal’s lives should be critically considered in the context of the animal’s overall QoL, that is, to consider euthanasia as an option earlier.

Animal age rarely features in EoL decision-making protocols. Advanced age is often cited as a reason not to euthanize an animal, i.e. that their clinical signs are a result of the normal ageing process, rather than declining QoL (Villalobos & Kaplan, 2007). Nearly half of the cats in our study had been diagnosed with a disease commonly found in older cats, e.g., hyperthyroidism or kidney dysfunction (Epstein et al., 2005; O’Neill et al., 2015; Spitznagel et al., 2018). This would have

made it difficult for owners to distinguish between an age-related decline in QoL, and a decline resulting from one of these diseases.

Our owners considered their veterinarian to be the professional or expert in EoL decision-making and euthanasia. To fully realize this role, veterinarians need to be skilled at pain recognition and effectively communicate the results of pain evaluations to their clients. In addition to pain, we need to be clear that there are other unpleasant experiences associated with ageing or chronic conditions in animals, for example, nausea resulting from kidney dysfunction. These experiences are no less important to the animal's QoL. Veterinary-client communication could also take the form of resources to help owners assess their animal's progress, for example, QoL assessment protocols. An open discussion about QoL, its assessment, and the current status of their animal is also an option (Main, 2007; Yeates & Main, 2009).

Owners in our study may not have always understood that their cat was on a trajectory towards death when they first presented their cat to their veterinarian. Therefore, veterinarians need to be aware that owners presenting an older animal, or one with a chronic disease, do not always realize they might die soon (Christiansen et al., 2016). This gives additional credence to veterinarians having early QoL conversations with their clients.

Human-centered themes

The cat's QoL was not the only consideration for owners in our study. Veterinarians needed to understand that a euthanasia decision meant permanently breaking a deep connection an owner had with their cat. This deep connection, gradual deterioration, and lack of distance to recognize change often blinded owners to their cat's condition at the time and they needed someone else to help them see how their cat was really doing. Many of our owners saw their cats as family members, and this is echoed in other studies, where it may be linked to strong attachment to animals (Brockman et al., 2008; Folger et al., 2012; Heuberger & Pierce, 2017).

Most of our owners could normalize death in some way and euthanasia was often perceived to be a dignified ending. However, owners still wanted their veterinarian to know how difficult death was for them. This conflict between normalizing death, and yet struggling to come to terms with it, could result in owners prolonging the decision to euthanize their cat. A number of our owners admitted this being the case for them.

Keeping an animal comfortable until a decision is made is one of the cornerstones of palliation during veterinary hospice care (Bishop et al., 2016; Epstein et al., 2005; Goldberg, 2016). This can be problematic when the cat has little to no chance of recovery and their QoL is severely compromised (Brockman et al., 2008; Epstein et al., 2005; Folger et al., 2012). In these cases, the owner may be prolonging the

life of their cat for their own benefit, that is, as a result of anticipatory grief (Brockman et al., 2008; Spitznagel et al., 2020). This creates an ethically challenging situation for the veterinarian whose responsibility lies with upholding the QoL of the animals under their care (Anonymous, 2011, 2012) and yet has some obligation to their paying animal-owning client. Added to this, animals are considered legal property of their owners in most jurisdictions (e.g. Anonymous, 1999). However, some allowances are made for veterinarians to intervene when necessary. For example, Section 138 of the New Zealand Animal Welfare Act 1999 states that veterinarians “*must, without delay, destroy that [severely injured or sick animal] animal or cause it to be destroyed*” if the animal’s owner does not agree to its destruction and does not seek a second opinion in a reasonable time (Anonymous, 1999). This emphasizes the existing belief that veterinarians need training in ethical reasoning and communication skills during their degree or as continued professional development after graduation (Batchelor et al., 2015; Fawcett et al., 2018; Hernandez et al., 2018).

Prognosis was an integrative theme that appeared throughout our discussions with owners. Owners wanted to predict the time course and outcome for their cat and struggled with the EoL decision when the ending was unclear. Some of our owners resorted to asking the internet for help instead of their veterinarian. This may have been because they felt their veterinarian was not involved in the decision or because they wanted to gather more information to make an informed decision. Whatever the case, it behooves the veterinarian to ensure the information that

clients are using to make a decision and that will impact the welfare of an animal under their care, is accurate, reliable, and timely. As other authors have suggested, this information could be provided by the veterinarian in the form of literature to read or by giving owners validated and reliable QoL assessment protocols to use for their cat (McMillan, 2000; Yeates & Main, 2009).

Most owners considered their veterinarian to be a 'good vet' and so had returned to them multiple times with their animal. This was valuable during the EoL decision-making process because they already had a trusting relationship with their veterinarian. Conversely, owners did not like it when they saw different or inexperienced veterinarians for their cat's condition. Continuity of care is important for clients, particularly when they are making important decisions about their animal's wellbeing (Anonymous, 2012; Back et al., 2009; Stoewen et al., 2014). The 'good vet' would know them and their animal, tell them they were doing the right thing for their animal, and validate their decision.

Similar to findings by Christiansen et al. (2016), owners in our study had different preferences for their veterinarian's role in EoL decision-making. These ranged from the desire for validation of their own decision, considering their veterinarian an expert and wanting to know what would happen with their cat, through to asking the veterinarian what they would do. Some owners in the aforementioned study wanted information and professional assessments from their veterinarian, others wanted support, while still others wanted their veterinarian to legitimise their

decision, and a sub-set of the owners wanted their veterinarian to guide them into a decision (Christiansen et al., 2016). It is clear, from these results, that there are a range of preferences for owner-veterinarian interactions during EoL decision-making and that ongoing and trusting relationships allows veterinarians to provide appropriate support.

Veterinarians can have various roles when they interact with their clients. Examples of these roles include: the paternalistic veterinarian who tells the owner what to do (Emanuel & Emanuel, 1992), the information-provider who leaves the decision to the owner and respects their autonomy, or the veterinarian who influences their client when their choices are not 'reasonable' (Christiansen et al., 2016; Yeates & Main, 2010). The paternalistic model of healthcare contrasts with client autonomy and informed choice and has since gone out of favor in both human and veterinary medicine (Back et al., 2009; Emanuel & Emanuel, 1992; Rollin, 2002). Veterinarians can also share in the decision-making process with their client (Christiansen et al., 2016; Rollin, 2002), or can exert their Aesculapian authority (Rollin, 2002; Rollin, 2007). They can act as garage mechanics or akin to pediatricians (Rollin, 2002; Rollin, 2007). The Strong Patient Advocate (SPA) concept recognizes that veterinarians are obligated to their patient, i.e., the animal under their care, and aligns with Codes of Professional Conduct for Veterinarians (Anonymous, 2011, 2012; Coghlan, 2018).

'Client autonomy' is often touted in the veterinary literature as being Best Practice for owner-veterinarian interactions during EoL decision-making (Morgan & McDonald, 2007; Morton, 2010). The term regularly appears in North American-centric publications and is often defined as the veterinarian giving the owner the information to make an informed choice for their animal (e.g. Morgan & McDonald, 2007). However, an alternative option for owner-veterinarian interactions places the onus on the client to decide how much of a role their veterinarian plays in the decision-making process (Christiansen et al., 2016; Yeates & Main, 2010). The cat owners in our study were clear that it was their choice to euthanize their cat, but also highly valued their trusted veterinarian's opinion and acknowledged that other people did play a role deciding. Yeates and Main (2010) argue veterinarians can exert influence over their client's decision-making in circumstances when the client has asked them to. In this case, veterinarians may lead the decision-making process, while still respecting client autonomy, that is, because the client has delegated the veterinarian this role (Rollin, 2011; Yeates & Main, 2010).

Overall, it was apparent that a 'good vet' needs to understand the owner's personal situation, their preference for veterinary assistance with decision-making, and validate their decision at the end (Christiansen et al., 2016; Heuberger et al., 2016; Spitznagel et al., 2020). The veterinarian could take on a number of different roles, dictated by the client, to achieve this, and preferably, the owner would deal with the same veterinarian during the EoL decision-making process. This ongoing,

trust-based relationship would facilitate the veterinarian fulfilling the role desired by a particular client.

Study limitations

This small-scale study was conducted using social science methodology with qualitative data. As such, generalizations to the wider cat-owning community of New Zealand cannot be made (Dawson & Campbell, 2009; Spitznagel et al., 2020). However, the study provides valuable information regarding the ways in which EoL decisions are currently being made by owners of older and chronically ill cats in New Zealand and the role of their veterinarian in the process. A major limitation of the findings is that our owner participants were those who presented their cat for euthanasia by a veterinarian. This excludes those who left their cat to die 'naturally' or killed their cat themselves. In common with other studies in this area, our owners were also largely dedicated owners with strong attachments to their cats (Bussolari et al., 2018; Spitznagel et al., 2020). This is probably because these are the owners who felt strongly enough to share their experiences with researchers. However, these owners are probably the ones most in need of veterinary input as they struggled to make the decision to end the life of their family member.

Most of the euthanasia events occurred within three months of the interview, and all were no more than six months before. However, as others have found, there may still have been recall bias in our participants. For some, this bias will have been

compounded by them attempting to remember what may have been a traumatic event (Spitznagel et al., 2020).

Overall, our results should be applied and understood in the context of the methods we used to collect the data. Our participants were New Zealand owners of older cats and those with chronic disease who were willing to share their experiences of the decision-making process with a researcher and were also happy for their veterinarian to be approached for interview. This suggests they had a reasonable relationship with their veterinarian.

This study is one of few that addresses the challenges inherent in owner decision-making for their cats, and the only study, to our knowledge, that does so using a qualitative methodology in the form of in-person client interviews.

7.7. Conclusions

Most owners in our study struggled to make the decision to end the life of their cat. Many of the owners realized their cat's welfare was poor but were not sure where on 'the slope' [of QoL decline] they should make the decision to end its life. Owners were often torn between wanting to give their cat a good chance to recover and not letting them suffer if they did not have long to live. They emphasized a need to predict what the time course and outcome would be for their cat. Their veterinarian was key to both validating and informing owner EoL decisions.

EoL decision-making is complex and veterinarians often find their role poorly defined (Morris, 2012). However, our owners appreciated the validation and expertise their veterinarian offered them as well as their understanding of their relationship with their cat. Veterinary practices could help owners deal with this difficult situation by offering their clients repeat visits with the same veterinarian who understands their needs, i.e., continuity of care. Future research aimed at exploring the veterinarian's perspective during EoL decision-making for the same animal would be a valuable addition to the field.

7.8. References

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CHAPTER 8: General discussion



8.1. Major findings

Veterinarians are widely recognised as advocates for animal welfare in western society and contribute to maintaining the quality of their patients' lives and minimising their suffering (Hewson, 2003; Morton, 2010; Yeates, 2012). This role includes managing the end of animals' lives (Morris, 2012; Yeates, 2013). With this in mind, the studies in this thesis explored the veterinarian's role in EoL management of animals. Specifically, the focus was on older cats and cats with chronic illness. Study 1 explored how EoL management of animals was taught to veterinary students in Australasian veterinary schools, while Study 2 explored owner's experiences of euthanasing their cat and the role of their veterinarian in the process.

Study 1

Information about teaching specific aspects of EoL management was generated by interviewing the educators responsible for this teaching at Australasian veterinary schools. Teaching of three key aspects were explored, namely: technical euthanasia (**Chapter 4**), decision-making (**Chapter 5**), and grief management (**Chapter 6**). Most animal species encountered in veterinary practice were included in this study

to achieve a holistic picture of how EoL management is taught to veterinary students. The overarching conclusion from this study was that a more robust approach to teaching EoL management that includes both theory and practical aspects of technical euthanasia, decision-making, and grief management is likely to improve job satisfaction and veterinary retention, client happiness, and animal welfare.

This conclusion is based on the finding that there was variation among universities in how technical and non-technical skills were taught to veterinary students. The technical skills necessary for animal euthanasia tended to be taught in later years, but relied on opportunities arising, for example, during euthanasia consultations with hospital clients. This meant competence and confidence of new graduates is likely to vary (**Chapter 4**). In contrast, for decision-making teaching, the distinction between earlier and later teaching was less obvious and most universities used a variety of methods to cover relevant material over the course of the degree. However, two universities relied on presentation of clinical cases for this teaching so that not all students at these veterinary schools will have been exposed to information relevant to making, or assisting in making, euthanasia decisions (**Chapter 4**). Grief management was taught at more universities in the earlier years of the degree. Client grief was taught more generically, for example, by teaching the components of the normal grief cycle, by student counsellors or psychologists, whereas grief of veterinarians was taught by clinicians using specific examples (**Chapter 5**). This discrepancy may result from time pressures inherent

in veterinary education, that is, not every subject can be covered in detail within the curriculum (Lord et al., 2017). The result is that not all graduates of these universities will have the necessary skills and competencies to confidently manage the EoL process for the animals under their care.

Study 2

After undertaking semi-structured interviews with owners about the recent euthanasia of their cat, nine themes were identified that reflected owner's thoughts on their decision to euthanase their cat. Four animal-centred themes were: cat behaviour change and weight loss, pain is a bad sign, signs of ageing are not good, and the benefits of having other people see what owners often could not. Collectively, owners conveyed five human-centred themes: veterinarians understanding owners' relationships with their cat, veterinary validation that owners were doing the right thing, the need for a good vet to manage EoL, a strong desire to know how things were going for their cat, and normalising death. The owners interviewed appreciated the expertise and validation their veterinarian provided but it was clear that continuity of care was important. The role of the veterinarian is often poorly defined, and owners' needs of the veterinarian varied in this study.

Traditionally, veterinary training emphasises saving or prolonging animal life. This is evidenced by a proliferation of veterinary specialties such as surgery, medicine, and oncology, where the focus is on diagnosing and treating animals to prolong

their lives (Rollin, 2002; Rollin, 2007, 2011). In addition, ending an animal's life could be seen as a failure (to treat) by some veterinarians (Persson et al., 2020; Rollin, 2002; Rollin, 2007, 2011). Nevertheless, the veterinarian's role in EoL management of animals has been defined in legislation (e.g. New Zealand Animal Welfare Act 1999, Anonymous, 1999) and Veterinary Codes of Conduct (e.g. Anonymous, 2011, 2012). In each of these, veterinarians have legal and professional obligations to humanely end animals' lives.

The role, or roles, of the veterinarian in the EoL management process was a key theme captured during my interviews with cat owners. Key roles were viewed to be providing validation of the owner's decision and expertise in animal health and welfare. Working with the same trusted veterinarian, that they knew, was also important to owners, that is, continuity of care.

8.2. Integrative findings

To link the findings of these two studies, this section will discuss whether the features cat owners thought were important for effective EoL management (Study 2) were taught to veterinary students (Study 1). In other words, does veterinary school training adequately prepare veterinarians for client expectations regarding EoL management of animals?

Cat behaviour change and weight loss

Cat owners described a range of eating behaviours and focused on them throughout our discussions as ways of making the decision to end the life of their cat. Most owners reported their cat went off food towards the end of their life despite owners encouraging them to eat using a variety of methods. When a cat went off its favourite food, a euthanasia decision soon followed. In addition to changes in feeding behaviour, most owners noticed that their cat had lost weight and some cats were toileting in inappropriate locations. Thus, from owners' point of view, these sorts of behaviour changes were strongly influential in making decisions to euthanase.

In Study 1 (**Chapter 5**), I found that animal-based indicators used to *inform* decision-making (e.g., animal welfare or QoL, prognosis, behaviour change) were reportedly taught at more universities than were human-centred factors considered to *influence* decision-making (e.g., financial considerations, cultural or religious reasons, veterinary resources). The use of changes in behaviour as indicators for euthanasia decision-making was reportedly taught at fewer universities than were animal welfare or QoL, or the use of prognostic indicators. However, QoL and prognostic indicators probably represent a broad spectrum of taught content and could include behaviour changes. Behavioural changes may not necessarily be considered in detail if educators do not go into the details of animal welfare or QoL assessments with students.

This again emphasises the time pressures inherent in veterinary education that restricts how many subjects, and their detail, that can be covered within the curriculum (Lord et al., 2017). However, given the value placed on behaviour changes for EoL decision-making by the cat owners in my study, it would be worth considering how best to incorporate detailed assessments into veterinary curricula. Veterinarians in practice also need to be aware of how owners are making EoL decisions and assessing their cat's QoL and need to have the skills necessary to assist owners with these assessments, for example, detailed knowledge of normal animal behaviour.

Because weight loss was clearly differentiated from other animal-based indicators that may inform EoL decision-making by my Study 1 representatives, I thought it was deserving of its own category. However, it was reportedly taught in the context of EoL decision-making for CA at few universities. Body weight, and particularly weight loss, appears in all published protocols used to assess QoL (e.g. Giuffrida et al., 2018; Tatlock et al., 2017; Vols et al., 2017) and my Study 2 cat owners' also thought it was important for EoL decision-making. Repeated measures of a cat's weight over time, and discussion of appetite, can help owners and veterinarians assess progressive changes in QoL (Main, 2007; Yeates & Main, 2009). Therefore, it follows that veterinary students should be explicitly taught to use body weight measurements for EoL decision-making.

Pain is a bad sign

Owners recognised that being pain-free was an important aspect of QoL towards the end of life, however, it became apparent that signs of pain were poorly recognised by owners. This created a tension between what owners' thought was important and what they were able to evaluate in their own cat and highlights the need for veterinarians to assist owners in identifying and managing pain in their cats.

The educators in Study 1 (**Chapter 5**) mentioned pain often enough that it warranted its own category. However, assessment of pain was apparently taught less often than were QoL assessment or prognostic indicators. Only half of the universities had educators who reported teaching students to use pain as an indicator to inform decision-making for CAs. This is an important finding because pain appears in all protocols used to assess QoL and is usually assigned high priority or weighting (e.g. Giuffrida et al., 2018; Tatlock et al., 2017; Vols et al., 2017). Therefore, if educators are teaching QoL assessment as often as they are reporting, I would have expected them to also report, and emphasise, teaching recognition of pain. Because this was not the case, I would recommend veterinary schools re-evaluate their curricula to ensure they have taught the relevant skills necessary for clinical practice to students before graduation. As my cat owners identified, how to undertake detailed animal welfare or QoL assessments on animals is one such necessary skill and pain recognition is key (Belshaw, 2018; Heuberger et al., 2016; Williams et al., 2017).

Signs of ageing in cats are not good

Owners did not think their cat's age impacted on their decision to end their life; however, signs of ageing were perceived negatively by the owners I spoke with. For example, one owner took offense to her veterinarian calling her cat geriatric. In Study 1 (**Chapter 5**), age or ageing was not assigned its own category within the indicators that were taught to inform decision-making. However, animal age was a sub-category of the human-centred factor 'Animal demographics' and may influence decision-making in some situations. Regardless, demographics were only taught as indicators at one university for CAs. Consequently, it is very unlikely that animal age is taught to veterinary students as an important factor in EoL decision-making. This teaching aligns with the perspectives of my cat owner participants, that is, age is not important for owner EoL decision-making.

Age may still have a role in EoL management of CAs and literature supports this. Recommendations for geriatric CA care include regular (usually 6-monthly) veterinary visits to assess and discuss QoL (Metzger, 2005). Thus, although animal age is not directly considered by owners and their veterinarians when making EoL decisions, it does factor into the overall care they provide.

The benefits of having other people see what owners often could not

Owners reported finding it hard to detect changes in their cat if they deteriorated slowly. Owner's perceptions of changes were not always accurate. Often it was this

slow decline that made it hard to make an EoL decision or know when to draw the line on the cat's life. A fresh set of eyes, from someone who had not seen the cat recently, helped highlight changes and thus with evaluating how they were doing.

Again, this theme was not a separate indicator category taught in Study 1 (**Chapter 5**). However, it may have been subsumed by one of the other factors, for example, the human-centred factor 'Owner decision' which included these sub-categories of educator responses:

Depends on individual owner, Owner decision, Owners know when it's time, Individual judgement, Everyone has different end points, Client perceptions, Owner concern, Owner input, Client decision, How owner feels about it, Outcome acceptable to owner, Quality of life from owner's perspective, Owner refuses to treat

There was insufficient detail available within my Study 1 results to draw conclusions about this specific theme, other than to highlight that veterinary students are being taught that owners decide when to euthanase their CAs.

The factors reportedly taught to veterinary students are not consistent with my findings from Study 2. All owners in my study did eventually agree that euthanasia was in the best interests of their cat – otherwise they would not have been participants in my study. However, none came to that decision without input from others, for example, from family and friends. Many owners also made the decision as a result of veterinary advice and expertise, and a few asked for their

veterinarian's opinion on whether or not they should euthanase their cat. Ultimately, veterinarians seem to have a much more active role in EoL decision-making than what was reportedly taught by educators in Study I. Examples of these roles include: the paternalistic veterinarian (Emanuel & Emanuel, 1992), the information-provider, the garage mechanic or paediatrician (Rollin, 2006), the veterinarian who influences their client (Christiansen et al., 2016; Yeates & Main, 2010), or who shares in the decision-making process (Christiansen et al., 2016; Rollin, 2002). Different owners want their veterinarian to play different roles when managing the end of their CAs life. Thus, veterinarians should be trained to ascertain these preferences and to interact with their clients in a variety of ways.

Veterinary validation that owners were doing the right thing

The cat owners I interviewed emphasised the importance of the veterinarian's opinion about the decisions they made. The most important role the veterinarian had in the minds of the owners I spoke with was one of validation. Owners appreciated this validation, and it often helped with the grieving process to hear that the veterinarian, as the expert or professional, agreed with their decision to euthanase their cat. Owners also expressed that their veterinarian could share in the decision-making and that they could help them come to the decision to euthanase together. Veterinary validation of owner decision-making is a prominent theme in literature that focuses on owner grief associated with ending the life of an animal (e.g. Matte et al., 2020). Participants in a study of owner grief following CA euthanasia identified 'reassurance' as one of the top three emotional

support practises veterinarians could offer clients (Matte et al., 2020). This validation could be given before the euthanasia event and in the context of decision-making, as well as after the event for grief management purposes. Like I did, these authors conclude that veterinarians have an important role in validating, or reassuring, CA owners about their EoL decisions. This highlights the importance of teaching veterinary students about their future role in EoL management of animals and how this links to shared decision-making and managing their client's grief.

Again, the teaching relating to grief management (**Chapter 6**) best reflects this theme. Teaching veterinary students to 'Support owner decision' included validating the owner's decision. This teaching implies that veterinary educators recognised the importance of veterinary validation for owner grief management.

Veterinarians understanding owners' relationships with their cat

The majority of owners in my study were very dedicated to their cat. They put their animal's interests first and felt a deep connection to such an extent that they described their cat as a member of their family or a friend. It was challenging for them when other people in their lives did not understand this relationship. A deep connection may have also developed with their cat if an owner was facing their own potential mortality. This deep connection had the effect of making the EoL decision much more difficult for these particular owners. These findings indicate the importance of teaching veterinary students the importance of understanding

their clients and their individual circumstances. A number of authors have identified the importance of veterinarians understanding client relationships and how a trusting relationship with their veterinarian is predicated on understanding the owner's personal circumstances (Matte et al., 2020; Spitznagel et al., 2020). Often veterinarians are one of the few people in owner's lives who understand their relationship to the CA and validation of this relationship can help to prevent disenfranchised grief for owners (Dawson & Campbell, 2009; Matte et al., 2020).

It was encouraging to see that 'Human-animal relationship' was a human-centred factor reportedly taught for EoL decision-making (**Chapter 5**), with sub-categories of training about the human-animal bond and attachment. Regardless, this factor was rarely taught overall and it was reportedly taught at only one university for CAs in the context of decision-making. However, if we examine the findings for teaching of grief management (**Chapter 6**), the category 'Human relationship to animals' was taught at more universities. Educators described teaching veterinary students to manage client grief differently depending on their client's relationship with their animal. Overall, this may mean that veterinary training in EoL management does include an understanding of owner-animal relationships, but that it was usually considered important for management of grief, not as a factor influencing decision-making. Nevertheless, it would be beneficial for veterinarians to be given explicit training about these relationships in the context of EoL decision-making. My Study 2 findings showed that, for some owners, their relationship with their cat influenced their decision, and therefore the animal's

QoL. Veterinarians who apparently understood this relationship were positively perceived by their clients resulting in a trusting veterinary-client relationship.

The need for a good vet to manage EoL

Most of my cat owners knew their veterinarian well because they considered them to be a 'good vet' and so had returned to them many times. Other things that made their veterinarian good in the owner's eyes were if they felt their veterinarian understood them or genuinely cared. Veterinary empathy resulted in a trusting relationship between these owners and their veterinarians. Seeing different veterinarians for a problem with the same animal had made the decision-making process harder for these owners. Not only did they not have that close relationship with the veterinarian, but they also had to relate to them all differently and explain the cat's condition over again to different people. Thus, there is a need for veterinary students to be taught about how to build rapport and develop trusting relationships with their future clients with a particular emphasis on those clients making EoL decisions for their animals. Grief management is also the most widely referenced area of veterinary EoL management which implies that it is an important topic for owners and veterinarians (e.g. Morris, 2012; Testoni et al., 2019; Testoni et al., 2017).

Unfortunately, it was not apparent from my Study 1 findings that educators emphasised the relationship between veterinarian and client as important for positive EoL decision-making for CAs. The human-animal relationship was

mentioned, but not how the client and veterinarian related to each other. The importance of this latter relationship was also not explicitly mentioned for grief management. However, it may have been represented in several of the reported grief management categories. For example, 'Communication skills' could include appropriately communicating with different clients and 'Individual owner differences' may also reflect differing relationships a veterinarian may develop with their clients.

Many of my cat owners wanted their veterinarian to have a role in dealing with their grief. Training to deal with grieving clients, understanding their clients, better communications skills, and compassion fatigue training were variously mentioned by my owners as ways that veterinarians could better deal with owners following CA loss.

In **Chapter 6**, the results were split into teaching related to 'Owner grief' and to 'Grief of veterinarians' to distinguish between these two facets of grief management education. Owner grief categories were by far the most commonly reported content taught. However, client grief was dealt with more generically in the early years of the degree, whereas teaching relating to the grief of veterinarians included more specific examples in later years.

Part of being a 'good vet' is carrying out the euthanasia of a client's animal without incident. My cat owners expected veterinarians to be good at performing

euthanasia. They felt the veterinarian should be familiar with the euthanasia procedure, have seen euthanasia's before, be able to perform euthanasia smoothly, know what to do if things go wrong, and be supervised if still learning. None of the owners I spoke with were concerned about how the euthanasia of their cat had been performed in the technical sense.

The results presented in my technical skills section (**Chapter 4**) indicate that euthanasia techniques were taught at more universities in later (clinical) years than early (preclinical) years. However, clinical teaching relied on opportunities presenting, for example, during euthanasia consultations. No universities gave students a chance to practise euthanasia techniques during a consultation with CAs.

This suggests that technical euthanasia skills are more likely to be developed once new graduates enter clinical practice. It also suggests that veterinary students are not exposed to EoL conversations had between veterinarians and owners during euthanasia consultations. However, given how important performing a 'good' euthanasia is for owners, relying on veterinarians to develop technical skills once in practice, or in the later years of their degree if the opportunity happens to present, is not appropriate in the context of EoL management of animals. New graduates are not comfortable carrying out euthanasia in the presence of a client which reflects a clear need, and desire, for additional euthanasia training and/or

supervision of veterinarians (Cohen-Salter et al., 2004; Fogle & Abrahamson, 1992; Tinga et al., 2001).

A strong desire to know how things were going for their cat

During our conversations about the whole process leading up to the euthanasia of their cat, owners mentioned times when they did not necessarily see death as the outcome for their cat, that is, they felt their cat might recover or continue in the same state. This lack of clarity made the process more difficult for owners. As a result of this underlying difficulty, owners often wanted their veterinarian to tell them how much longer their cat had or consulted the internet for advice on their cat's condition. Knowing what would happen to their cat was important for owners, and veterinarians who were honest with them about what they would do in the same position were perceived as good veterinarians.

With regard to teaching EoL decision-making, prognosis was a prominent animal-based indicator reported at many universities. Representative from six of the eight universities mentioned teaching 'prognosis' to veterinary students in the context of making EoL decisions for CAs. The prognosis category included an array of sub-categories relevant to different animal types mentioned by educators:

Outcomes, Prognosis, Prognosis to discharge, Prognosis medium to long-term, Prognosis of return to function, Will animal be normal again, Likelihood of full recovery, Likely response to treatment, Response to treatment, No hope of recovery, Time to recovery, Very ill, Sick animal, No

improvement, Rapid decline, Stress of hospitalisation, Euthanase if need palliative care, Will they be OK in captivity, 100% fitness for survival in wild, Probability of rehabilitation and release, Different wild animals need release, Able to be rehomed, Cetacean re-stranding, Diagnosed with disease without treatment, Acute injury with poor prognosis, Number of treatments already, Days of treatment already, What animal goes through. Disease or injury-specific terms that may indicate a terminal diagnosis were also included e.g., terminal bone fracture, organ failure, down cow, chronic disease

The common theme amongst these sub-categories is that veterinary educators taught students to consider the outcome for the animal when making, or assisting owners to make, EoL decisions.

Veterinary medicine is a scientific discipline in which outcomes, prognosis, timelines, and life-expectancy are important for understanding chronic conditions and disease trajectories (Rollin, 2007). Veterinary literature heavily emphasises prognosis, so it is unsurprising that educators chose to focus on outcomes to this extent (e.g. Fischer et al., 2011; Ruda & Heiene, 2012). Many people also feel the need to find an element of certainty in the uncertainty inherent in some EoL decisions for animals (Christiansen et al., 2013; Stoewen et al., 2019; Stoewen et al., 2014). This need is as important for owners as it is veterinarians.

However, not everyone needs, or wants, the same level of knowledge. Some people find comfort in knowing less about what will happen, while others like to know every detail (Stoewen et al., 2019). Accordingly, veterinarians need to be aware of the information preferences of their client and understand that not everyone has the same desire for knowledge (Charles et al., 1997; Janke et al., 2021; Stoewen et al., 2019). Conversely, veterinarians may be placed in a difficult situation if a client needs to know the outcome for an animal whose prognosis is unclear.

Normalising death

My owner's attitude to, and experience with, death also influenced their decision to end their cat's life. Death was normalised by these owners and was described as natural by one owner. Many rationalised the decision to end the life of their cat by not wanting to see them suffering. They compared death of animals with death of humans, and particularly loved ones who they had watched suffer while dying (Adams et al., 1999; Dawson & Campbell, 2009). And many thought that death could be dignified. A third of owners were upset that they could make the decision to end the life of their cat but had to watch human loved ones suffer while dying. However, it must be remembered that these are owners who chose to euthanase their cat and to be interviewed about this decision. Their cats were also older or chronically ill. Not all CA owners may normalise death in the same way as the owners in Study 2.

Again, the findings on grief management teaching best reflect this theme (**Chapter 6**). The category of ‘Doing right thing for animal’ was reportedly taught by participants. This included comments such as: euthanasia is a gift for animal welfare, that veterinarians are doing a favour for the animal, and that they are ending animal suffering. In that case, these comments related to veterinary grief and were not explicitly reported for owner grief management teaching. However, the normalisation of veterinary euthanasia was covered by educators and could be extended to include validation of their client’s decision to euthanase. Euthanasia is not just normalised by the veterinary profession; it is also a legal expectation of veterinarians. Section 138 of the New Zealand Animal Welfare Act 1999 states that veterinarians “*must, without delay, destroy that [severely injured or sick animal] animal or cause it to be destroyed*” (Anonymous, 1999). There is a need for client perceptions of euthanasia to be explicitly discussed in the context of their EoL decision-making and for veterinarians to reinforce or validate the normality of animal death for their clients.

8.3. Overall role of veterinarians in EoL management of older and chronically ill cats and relationship to reported teaching

In my study, good veterinarians were those who validated cat owners’ decisions about euthanasing their cat, by offering an expert opinion because they were the professional and their client trusted them. Good veterinarians provided information about the cat’s QoL and outcome thus guiding owners to make their own decisions. To fulfil these roles, veterinarians need to be aware of how owners

are making EoL decisions and assessing their cat's QoL, have the skills and confidence necessary to assist owners with EoL decisions, and be aware of their client's expectations during EoL management of their cats. Interpersonal skills should be the focus of training veterinarians to undertake EoL management of animals. Communication skills and understanding the diversity and influence of human-animal relationships is an important facet of these interpersonal skills (Chur-Hansen, 2010). This adds further weight to the importance of flexibility, appreciating the client's perspective, and responding accordingly to enhance the veterinary-client aspect of EoL management of animals (Shaw et al., 2006; Shaw, 2013).

Study 1 demonstrated some gaps that, if filled, could improve veterinary training in EoL management of animals (**Figure 8.1**). Technical aspects of euthanasia were not taught consistently for CAs and this needs to be improved to ensure new graduates meet client expectations – that is, they are as competent as my cat owner participants assumed. I acknowledge that teaching euthanasia techniques for CAs, who are often considered family members by their owners, is challenging. On one hand, veterinary students need to become 'good vets' and acquire the skills necessary for their future careers. On the other hand, a veterinary student observing the final moments between an owner and their CA may not be appropriate. Alternatively, a number of owners may be more than willing to have a student partake in the experience with them. The problem is about how best to approach the subject of student observation with clients. If asked directly by their

trusted veterinary professional, clients may be more likely to agree. This trusting relationship is most likely to develop, and continue, when veterinary clinics try as much as possible to have their clients see their preferred veterinarian at each visit.

There also appeared to be gaps in teaching EoL decision-making relative to what was reported to be important to cat owners (**Figure 8.1**). Owners expected their veterinarian to be the professional or ‘expert’ when it came to knowledge of animal health and welfare. The cat owners in my study also expressed a desire to know what was going on with their cat. Proficiency in animal welfare, or QoL, assessments by veterinarians is critical to their role as animal welfare advocates (Freire et al., 2017; Reynolds et al., 2010; Rollin, 2007). In order to improve welfare, we need to be able to assess it (Ledger & Mellor, 2018; Mellor, 2017). Moreover, to be able to assess welfare, veterinarians need to know what animal welfare is. Not all veterinary students are taught how to assess animal welfare or QoL in the context of EoL decisions (**Chapter 4**). This is likely the result of the broad and theoretical approach taken to animal welfare teaching at veterinary schools (Freire et al., 2017; Shivley et al., 2016).

Animal welfare is multidisciplinary and an umbrella term that includes knowledge of scientific advances in, for example, animal behaviour, nutrition, physiology, and neuroscience. It also includes features of ethics, policy, and law (Mellor et al., 2009). By virtue of their training, veterinarians have expertise in most areas relevant to animal welfare. Consequently, improvements in animal welfare training

for veterinarians would not require a massive overhaul of current veterinary curricula. Instead, material already taught need only be reframed in the context of how to apply it to animal welfare assessments and EoL management.

In contrast, teaching of grief-related topics left only a few gaps to fill (**Figure 8.1**). Grief management teaching best reflected many of the features my cat owner participants wanted from their veterinarian, and particularly the human-centred themes taught to students. The majority of this grief management teaching was performed by student counsellors and psychologists in earlier (preclinical) years. This means these human-centred themes may not have been explicitly linked to the decision-making process that happens in clinical practice, and, more importantly, to the veterinarian's role in EoL management. Without explicit alignment, veterinary students may be left thinking that veterinarians have only a limited role, or even no role, in managing their client's emotions and that this should be left to trained professionals. However, my cat owner participants emphasised the important role their veterinarian had played in the EoL process, suggesting that training, in New Zealand at least, is effective in this regard.

Altogether, these findings suggest that there is a need to train veterinarians HOW to communicate (e.g., communication styles and skills) as well as WHAT to communicate (e.g., welfare indicators and what they mean for an animal's QoL or welfare) about EoL management of animals. This would allow animal-owning clients to 'know what was going on with their cat', 'feel that their veterinarian

understands their relationship with their cat', and 'develop a good relationship with their veterinarian' (**Figure 8.1**). This approach would also allow veterinarians to 'validate their client's decision to euthanase their animal' and communicate their assessment of the animal's QoL to their client so that owners could have a better understand of 'what will happen' (**Figure 8.1**).

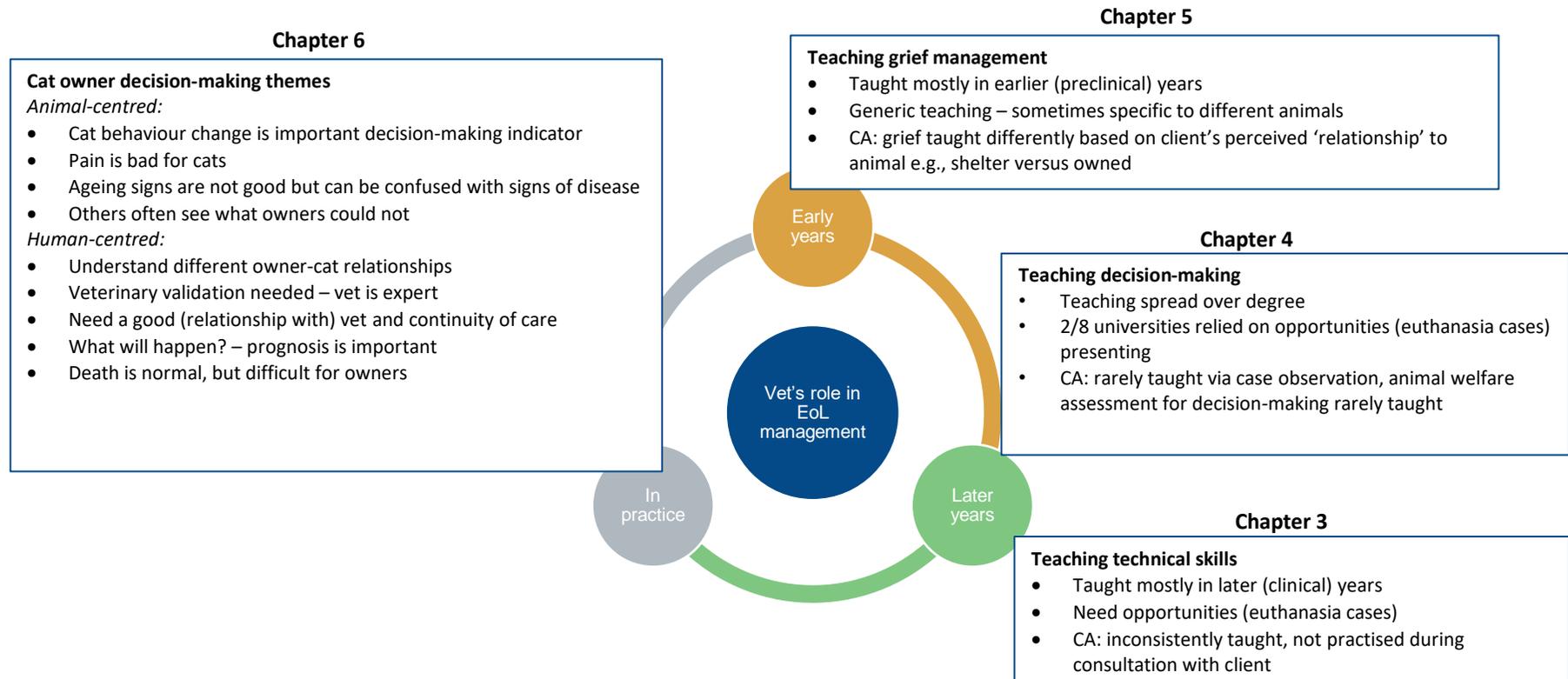


Figure 8.3 Key research findings as they relate to the phase of a veterinary professional’s training and early career: The role of veterinarians in end-of-life management of animals with a focus on older and chronically ill cats. CA = companion animal-specific findings.

8.4. Methodological developments and considerations

During the course of this research and coming from a clinical background, I have learnt how to perform social science research, and the language, concepts, and methodology associated with it. I have learnt how to perform in-depth interviews and interpret qualitative data. Most importantly, my worldview has shifted, and this has impacted how I read and analyse the work of others.

Social science research was not something I was familiar with before undertaking this research. Concepts like ontology and epistemology were foreign to me. Therefore, this project began with a steep learning curve as I familiarised myself with the material necessary to understand and conduct my own research. I was more familiar with how to handle quantitative data and so I have had to learn to use the software NVivo for qualitative data analysis and processing.

My worldview has moved away from *positivism*, the dominant epistemological position in my veterinary science training, according to which true knowledge is only discovered through research resulting from an experimental design (Bloomberg & Volpe, 2016; Braun & Clarke, 2013; Crotty, 1998). I now recognise that knowledge and its generation reflect our own perspective and cannot be separated from this to create so-called 'objective' data. Thus, I acknowledge the active role I have had in creating the information presented in this thesis (Bloomberg & Volpe, 2016; Curtis & Curtis, 2011; Maxwell, 2009).

Strengths and limitations of methodology

This research has explored how aspects of EoL management, specifically technical euthanasia skills, EoL decision-making, and grief management, are taught to Australasian veterinary students. This research also advances understanding of the role veterinarians play in clinical EoL management from the perspective of owners of older and chronically ill cats in New Zealand. In addition, I have explored how these owners formulated their decisions to end their cats' lives. The work has given rise to four peer-reviewed publications. The qualitative data used to inform the findings were created ('collected') and analysed using a predominantly constructivism theoretical perspective. This approach has provided a richness and depth to the resultant data that would not have been possible using a positivist theoretical approach. However, it is important to acknowledge potential limitations associated with the selected methods and the ways in which I mitigated those limitations in my research approach.

Study 1

The main limitation of Study 1 is how the data were collected and reported. Data were collated to university-level, that is, the responses reflected only whether a certain topic was taught at least once at the university. From these data, I was not able to determine how commonly these topics were taught at the university, in what detail topics were taught, or what proportion of students were exposed. All I could ascertain from a positive response in any category is that at least one

educator at the university taught something of relevance at least one time over the course of the degree.

Also, the university representatives only interviewed a subset of academics and teaching staff, therefore, there is a chance that some areas were being taught by an individual who was not interviewed. However, the snowball sampling approach used was likely to have minimised this risk as it allowed representatives to reach more educators than would other sampling methods (Lyons 2015). Snowball sampling allowed participants to: (1) offer information of other curriculum areas they thought relevant topics might be taught, and (2) recommend other participants to interview.

Interviews were also conducted and summarised by a different representative at each university before being analysed by me. A degree of summary and analysis will have been conducted by different representatives while completing the questionnaire. This introduces potential bias into the data set due to inconsistencies in how these summaries were generated by each representative. Unfortunately, the primary interviews were not recorded for later analysis by a single person. This would have allowed for a more detailed thematic analysis of the data and would be best applied in subsequent studies (Braun & Clarke, 2013).

Finally, some of the answers given by participants, and recorded by representatives, may have reflected differences in how they understood key terms,

which were not defined in the interview guide. For example, there is disagreement as to whether 'euthanasia' refers only to a humane method of killing, or that the death must also be in the animal's interest (Leary et al. 2020). The possible effect of these differences in how key terms are understood is that some areas of teaching may have been under- or over-represented in my data set. There was also potential for response bias to occur if participants felt that it was socially or professionally desirable for them to be teaching areas they were asked about (Nederhof, 1985).

However, on balance, I chose to use a structured interview rather than written surveys to allow for representatives to further explain questions and terms that may have otherwise been misunderstood. This approach likely also allowed for slightly more detailed and accurate information about this kind of teaching than has been obtained from studies relying on curriculum documents or information obtained from heads of school or department. The interview method has also been shown to increase response rate compared to surveys (Battistutta et al., 1983).

Notwithstanding these limitations, this is the first study of EoL management training of veterinary students in Australasia. The findings from my study further emphasise the need to reassess current models of veterinary training in order to improve the welfare of animals that are subject to end of life care. There are implications for the veterinarian, animal, client, business, and veterinary profession of inadequate training in euthanasia decision-making (**Figure 8.4**). Problems resulting from new graduates not receiving adequate training in

euthanasia decision-making during their veterinary degree include: emotional or moral stress in the veterinary profession (Fawcett, 2013; Knesl et al., 2017; Moir & Van den Brink, 2020; Rollin, 2011) increasing the risk of mistakes being made and animal welfare being compromised, and a deterioration of the veterinary-client relationship.

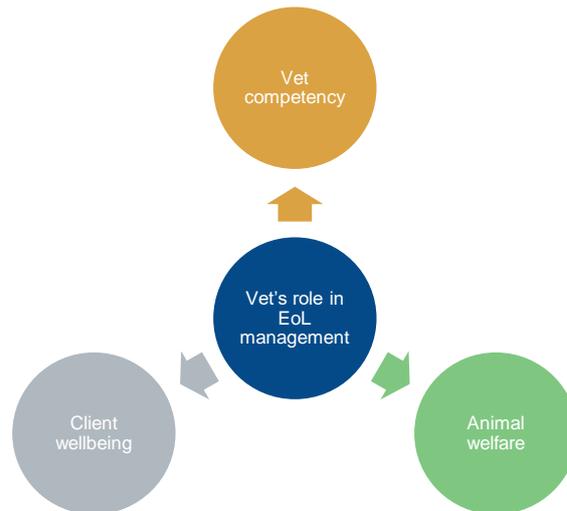


Figure 8.4 The findings of the current body of research have important implications for developing veterinary curricula and competency, of new graduates, as well as the welfare of the animals they treat and the wellbeing of the clients they serve. EoL = end-of-life

Study 2

Study 2 was conducted using social science methodology producing qualitative data. As such, the results are not generalisable to the entire cat-owning population of New Zealand nor were they intended to be (Dawson & Campbell, 2009; Spitznagel et al., 2020). In common with other studies in this area, participants were mostly dedicated owners with strong attachments to their cats (Bussolari et al., 2018; Spitznagel et al., 2020). This is probably because these are the owners who felt strongly enough to share their experiences with researchers. My results should be applied and understood in the context of the methods used to collect

the data. My participants were New Zealand owners of older cats and those with chronic disease who were strongly attached to their cat and willing to share their experiences of the decision-making process with a researcher. Veterinarians may encounter owners with very different expectations and needs to those expressed by my participants.

Most of the euthanasia events occurred in the three months prior to the interview, and all occurred no more than six months before. However, as others have found, there may still have been recall bias in our participants, for example, owners may have forgotten important details about their cat's condition and their decision-making process. This bias may have been compounded by attempting to remember what may have been a traumatic event for some (Spitznagel et al., 2020). However, their lasting impression of the event will likely influence future decisions and interactions with their veterinarian.

Credibility of the research

It is just as important to demonstrate the credibility of research approached using social science inquiry as it is for fundamental science approaches. There are a range of procedures that can be used to demonstrate this credibility in this context, and both the terminology and the criteria are linked to the lens used by the researcher and the paradigm assumptions (Creswell, 2014; Creswell & Miller, 2000; Polkinghorne, 2005).

Table 8.2 Validity procedures within social science lens and related paradigm assumptions. From Creswell & Miller, (2000)

Paradigm assumption/Lens	Postpositivist or Systematic Paradigm	Constructivist Paradigm	Critical Paradigm
<i>Lens of the Researcher</i>	Triangulation	Disconfirming evidence	Researcher reflexivity
<i>Lens of Study Participants</i>	Member checking	Prolonged engagement in the field	Collaboration
<i>Lens of People External to the Study</i>	The audit trail	Thick, rich description	Peer debriefing

Table 8.2 gives a succinct summary of the relationships between paradigm, terminology, and approach to demonstrating credibility (Creswell & Miller, 2000). Briefly, research approached from a postpositivist paradigm typically employs specific protocols for establishing validity in qualitative data in an attempt to achieve equivalence with the approach to validating quantitative data (Creswell & Miller, 2000; Crotty, 1998). In contrast, the constructivist position uses validity procedures and criteria for demonstrating validity that are labelled in ways that distinguish them from approaches using quantitative data. Examples include ‘trustworthiness’ (i.e., credibility) and ‘authenticity’ (Creswell & Miller, 2000; Crotty, 1998). Accordingly, triangulation, member checking, and audit trails are validity procedures that align with *postpositivist* paradigms, while disconfirming evidence, prolonged engagement in the field, and rich descriptions align with the *constructivist* paradigm (Creswell & Miller, 2000).

This research is grounded in a *constructivist* theoretical position, that is, I sought to examine a particular social situation and achieve a holistic understanding of others’ experiences (Bloomberg & Volpe, 2016; Crotty, 1998). The situation being examined in this case was the veterinarian’s role in EoL management of animals.

My choice of a constructivist approach for this research aligns with the focus on holistic experience. I recognise that knowledge reflects our own perspective and cannot be separated from this to create so-called 'objective' data. Thus, I acknowledge that the information obtained here has been formed because of the research process and I have had an active role in creating it (Bloomberg & Volpe, 2016; Curtis & Curtis, 2011b; Maxwell, 2009). I will now describe each of Creswell & Miller (2000)'s validity procedures in relation to my research and how I have approached each.

As noted above, triangulation, member checking, and audit trails are not typically used for social science inquiry approached from a *constructivist* position (Creswell & Miller, 2000). Triangulation is a validity procedure whereby researchers use different sources of information to identify some form of convergence or agreement in the data. This procedure assumes a single objective truth that can be found in the data and attempts to remove the researcher's lens, often referred to as 'bias', from the data analysis process. Therefore, this procedure is firmly entrenched in a *postpositivist* paradigm (Creswell & Miller, 2000). For this reason, triangulation, using different sources of information, was not performed on the data from my second study. However, the results were later discussed in relation to findings from similar research and this could be considered a form of triangulation.

A procedure that is like triangulation, but that reflects the *constructivist* approach chosen for my research, is disconfirming evidence. This form of validity check is achieved by 're-checking' the data for evidence that confirms or disconfirms preliminary themes (Creswell & Miller, 2000). In study 2, template analysis was used on the data and represents a structured approach to thematic analysis. In this approach, preliminary themes are developed and re-appraised on multiple occasions using the original data (Brooks et al., 2015). Thus, template analysis, when used correctly, is a formal procedure for disconfirming evidence and was more appropriate than triangulation as a validity procedure for my data (Brooks et al., 2015).

Member checking is a validity procedure focused on the study participants. Data and interpretations are presented back to participants to confirm the credibility of the information and the narrative created from the data (Creswell & Miller, 2000). There are several ways of achieving this; participants can view the raw data (e.g., transcriptions) and/or the findings, and comment on the accuracy of each (Creswell & Miller, 2000). In Study 2, all participants were sent their own written transcripts for comment. However, the final themes were not reviewed by participants as they might be for a *postpositivist* paradigm. Again, this reflects a *constructivist* approach towards data 'co-creation' (Creswell & Miller, 2000). I recognised my role in creating the themes and data, therefore, any attempt to remove myself from the final product would have been a misrepresentation of the data production process. Instead, I used researcher reflexivity, a validity procedure

most closely aligned to a *critical* paradigm, to explain my role in data production. Research reflexivity occurs when researchers describe their personal beliefs and values that may shape the research process. This allows readers to interpret findings alongside the researcher's lens and how it may have shaped the data (Creswell & Miller, 2000). The methodology section of this thesis has a reflexive section that clearly lays out my personal perspective and acknowledges my role as the data co-creator.

An audit trail is another process that aligns with a *postpositivist* paradigm. In this procedure, researchers keep a research log or journal of their research process and provide this to external auditors or reviewers. Reviewers can then use this journal to ask questions about the data analysis process, including questions about the degree of researcher bias (Creswell & Miller, 2000). For study 2, I kept a detailed journal of my research process. I wrote notes after each interview that summarised my feeling about it and included some thoughts on initial themes. I kept a running log during my coding and re-coding process that noted decisions I made and why. However, I have not included this journal in my dissertation as it was only ever intended to be used to assist me to recall my decision-making process while analysing my data and avoid duplication.

Another validity procedure grounded in a *constructivist* paradigm is for researchers to engage in the field for a prolonged period (Creswell & Miller, 2000). This allows researchers to build trust and establish rapport with participants. Prolonged engagement in the field is particularly important for ethnographers and

allows researchers to compare interview data with observational data (Creswell & Miller, 2000). Again, the reflexive section of my Methodology chapter details my role as a veterinarian and cat owner and how this experience 'in the field' gave me rapport with my participants. This rapport allowed the participants to engage with our discussions in a different way when compared with someone else who may not have my experience and attributes. Trust and rapport were also built by me taking a relaxed, conversational approach to the interview. My interviews lasted at least an hour each, and many were over two hours. This was on top of the time spent chatting to participants before and after the recording period. This time allowed for further engagement between participant and researcher and promoted congeniality and trust.

Participant collaboration is another type of validity that is aligned with a *critical* paradigm and encourages participants to be actively involved in study design or data analysis (Creswell & Miller, 2000). This type of validity was not a feature of my research. However, the broader veterinary industry, e.g., members of the New Zealand Veterinary Association (NZVA), were consulted on potential lines of questioning for this research before I began. The results of this research were also presented in the magazine published for the NZVA membership to 'close the loop' and ensure veterinarians were kept informed of my research.

Researchers can also include vivid descriptions of the study as a means of establishing credibility (Creswell & Miller, 2000). These descriptions include rich

details about the setting, participants, and themes produced using qualitative data. By including this level of detail, readers can understand the events being described in an experiential manner and recognise that the account is credible. At the conclusion of each interview, I recorded details about the interview (e.g., time, location, participant demeanour, reactions to questions) in my research journal. I referred to some of these details during my data analysis process. However, because this was not an ethnographic study, I did not present this level of detail in the results.

A final type of validity that can be used for qualitative data is having someone familiar with the research, or the phenomenon being explored, review or debrief the work. This is known as peer debriefing (Creswell & Miller, 2000). Throughout the process of data analysis, I spoke with my supervisors and other experts in the field of animal welfare and companion animal science about my initial findings, before finalising themes based on these conversations. Because this validity procedure aligns with a *critical* paradigm, rather than the *constructivist* paradigm used here, these conversations were not formalised or reported with the results. Instead, these debriefing sessions served as a means of sounding out preliminary themes.

To summarise, in study 2, I employed four of the nine forms of validity described by Creswell and Miller (2000): disconfirming evidence, prolonged engagement in the field, thick and rich descriptions in a journal, and researcher reflexivity. Three

of those that were not employed (i.e., triangulation, member checking, and audit trails) align with *postpositivist* paradigms that are not consistent with the approach explicitly taken in this study. The remaining two validity procedures not employed (i.e., collaboration and peer debriefing) align with a *critical* paradigm. Interpreted from a *postpositivist* perspective, the research in this thesis could be perceived as failing in some forms of validity (Creswell & Miller, 2000). However, when viewed from the declared *constructivist* theoretical perspective, this research achieves a high level of credibility.

This study is, to my knowledge, one of few that explores the challenges inherent in owner decision-making for their cats, and the only study that does so using a qualitative methodology in the form of in-person client interviews. The study provides valuable information regarding the ways in which EoL decisions are currently being made by owners of older and chronically ill cats in New Zealand and the role of their veterinarian in the process.

8.5. Future research

Future research could be aimed at obtaining a more detailed understanding of teaching of EoL decision-making for animals in higher education. For example, via thematic analysis of transcriptions of detailed interviews with educators and students to better estimate and understand the details of the teaching (Magnier et al. 2011; Christiansen et al. 2016; Norman 2017).

Research is also needed to determine whether the material educators are reporting as having been taught is in fact consistent with what students are learning during their veterinary program. On the one hand, students should be learning skills they will require as veterinary professionals. On the other, they are in a program for three to five years where the emphasis is on assessment and grades. Examining the way in which aspects of EoL management are assessed may better inform the development of veterinary competency in these important areas of clinical practice.

Future studies should also directly examine links between veterinary teaching of EoL management and competency in new graduates. A survey of veterinarians asking about their current euthanasia practises could quantitatively evaluate how they are performing euthanasia. This survey could also ask veterinarians what they think needs to be taught better. This could then be compared against what was reportedly taught to students and what cat owners want from their veterinarian and could be used to inform continued professional development opportunities.

It is important to note that I have not explored the veterinarian's perspective of their role in EoL management. Paired, but separate, interviews with owners and veterinarians reflecting on their experiences with EoL management of the same cat would be a valuable addition to the field. This would allow a direct comparison of owner and veterinary perceptions of the same euthanasia event.

Future work could also explore a training intervention that integrates veterinary-client (Figure 8.5; yellow arrow) and animal-human communication (Figure 8.5; blue and green arrows) strategies into one communication framework. As an example, we could explore how integrating the Five Domains Model for welfare assessment (Mellor et al., 2020) into the ‘Knowledge’ portion of the SPIKES model (Baile et al., 2000) for delivering bad news (Figure 8.5; purple arrows) impacts on veterinary student EoL conversations with simulated clients.

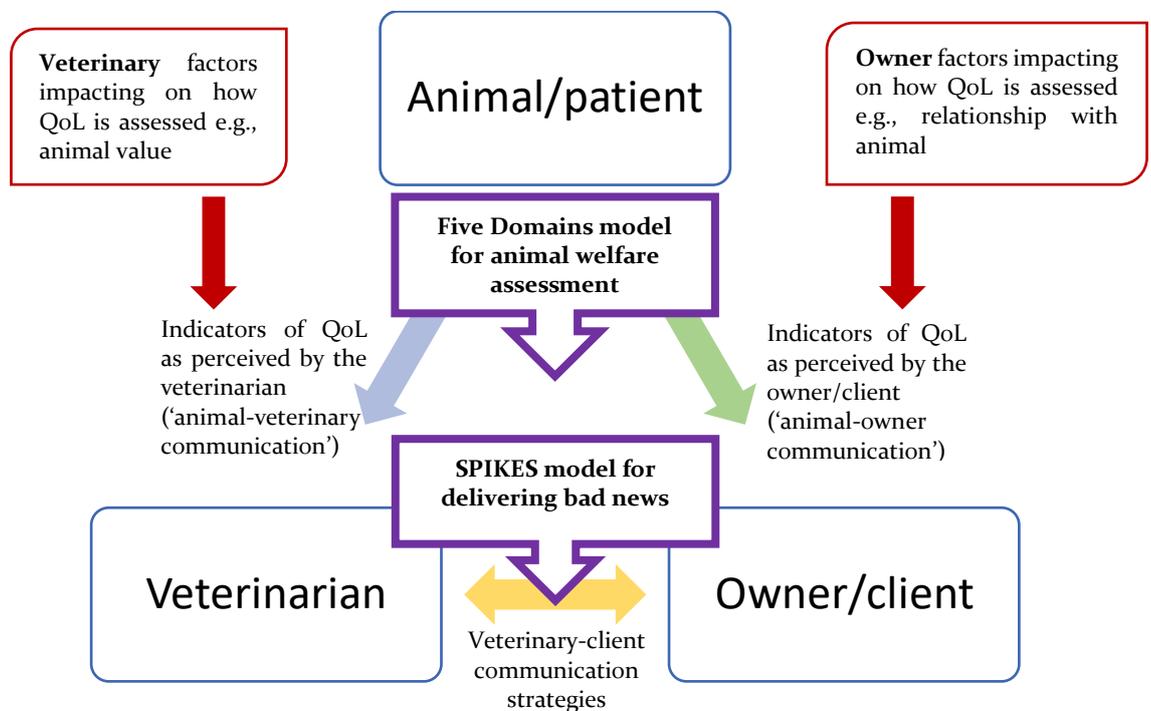


Figure 8.5 The tripartite communication relationship between animal, veterinarian, and owner; QoL = quality of life.

8.6. Conclusions and recommendations

Overall, the studies presented in this thesis can inform veterinary training and guide veterinarians in practice when managing the end of animals' lives. As a result of this research, my findings and recommendations can be distilled into the following salient points (**Figure 8.4**):

- Consistent experiences are needed for veterinary students over the entire degree to learn and apply the technical and interpersonal skills necessary to carry out good animal euthanasia.
- Vertical integration between early and later years of veterinary student training would allow important topics, such as EoL management, to be reinforced and contextualised.
- Greater weighting should be given to animal welfare training for veterinary students so that they can appreciate their various roles as animal welfare advocates and develop the skills necessary to assess QoL in the animals under their care.
- There is a need for professional development opportunities for veterinary educators to upskill in areas that have progressed since their own training in veterinary science, for example, animal welfare (e.g., animal welfare assessment), and relevant elements of human psychology (e.g., communication skills and understanding diversity and influence of human-animal relationships).

- Improved veterinary understanding of owner relationships and attachment to animals, with a focus on companion animals as family members, will contribute towards a trusting veterinarian-client relationship.
- Continuity of care is highly valued by clients, particularly for owners with older animals or whose animals have chronic conditions, and thus should be prioritised by veterinary clinics.
- An understanding that veterinary clients have different needs which may result in veterinarians taking on a variety of roles in managing the end of animal lives.
- Veterinarians should be reminded of the trust placed in members of the veterinary profession and the reliance on veterinary expertise for knowledge of animal welfare so that they can do their utmost to provide this expertise.

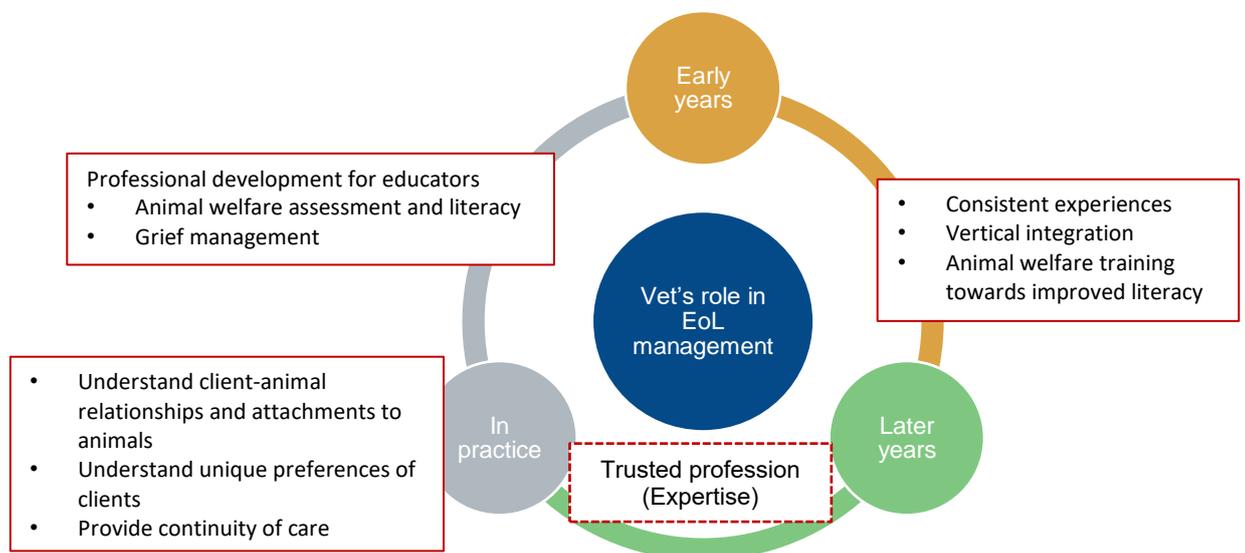


Figure 8.6 Recommendations for veterinary training and practising veterinarians from the findings of this research as they relate to the phase of a veterinary professional's training and early career

Veterinarians have the potential to help their clients with each of the areas identified during my interviews with cat owners. Above all, my research findings have important implications for the development of veterinary curricula and for supporting competency of new graduates, as well as the welfare of the animals they treat and the wellbeing of the clients they serve. These findings support my earlier premise (**Chapter 2**) that there is a need for a veterinary-specific communication framework that includes the animal and consideration of its QoL at the end of its life. This framework could advance the priorities of all three parties in veterinary consultations about EoL management of animals (**Figure 8.5**).

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Appendix I: Chapter 3 Statement of contribution

DRC 16



MASSEY UNIVERSITY
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**STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS**

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Katherine Littlewood
Name/title of Primary Supervisor:	Associate Professor Ngaio Beausoleil
Name of Research Output and full reference:	
Littlewood, K. E., Beausoleil, N. J., Stafford, K. J., Stephens, C., Collins, T., Fawcett, A., Hazel, S., Lloyd, J. K. F., Mallia, C., Richards, L., Wedler, N. K., & Zito, S. (2018). Exploring how end-of-life management is taught to Australasian veterinary students. Part 1: technical euthanasia. <i>Veterinary Record</i> , 183(691), 1-10. https://doi.org/10.1136/vr.104775	
In which Chapter is the Manuscript /Published work:	Chapter 3
Please indicate:	
<ul style="list-style-type: none"> The percentage of the manuscript/Published Work that was contributed by the candidate: 	70%
and	
<ul style="list-style-type: none"> Describe the contribution that the candidate has made to the Manuscript/Published Work: 	
Designed the study and collected data at Massey University, liaised with representatives at other universities, wrote the first draft and edited subsequent drafts of the article, and responded to reviewers.	
For manuscripts intended for publication please indicate target journal:	
Candidate's Signature:	
Date:	29 March 2021
Primary Supervisor's Signature:	
Date:	29/03/21

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Appendix II: Chapter 4 Statement of contribution

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We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Katherine Littlewood	
Name/title of Primary Supervisor:	Associate Professor Ngaio Beausoleil	
Name of Research Output and full reference:		
Littlewood, K. E., Beausoleil, N. J., Stafford, K. J., Stephens, C., Collins, T., Quain, A., Hazel, S., Lloyd, J. K. F., Mallia, C., Richards, L., Wedler, N. K., & Zito, S. How decision-making about euthanasia for animals is taught to Australasian veterinary students. Under review.		
In which Chapter is the Manuscript /Published work:	Chapter 4	
Please indicate:		
• The percentage of the manuscript/Published Work that was contributed by the candidate:	70%	
and		
• Describe the contribution that the candidate has made to the Manuscript/Published Work:		
Designed the study and collected data at Massey University, liaised with representatives at other universities, wrote the first draft and edited subsequent drafts of the article, and responded to reviewers.		
For manuscripts intended for publication please indicate target journal:		
Australian Veterinary Journal		
Candidate's Signature:		
Date:	29 March 2021	
Primary Supervisor's Signature:		
Date:	29/03/21	

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Appendix III: Chapter 5 Statement of contribution

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We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Katherine Littlewood
Name/title of Primary Supervisor:	Associate Professor Ngaio Beausoleil
Name of Research Output and full reference:	
Littlewood, K. E., Beausoleil, N. J., Stafford, K. J., Stephens, C., Collins, T., Fawcett, A., Hazel, S., Lloyd, J. K. F., Mallia, C., Richards, L., Wedler, N. K., & Zito, S. (2020). How management of grief associated with ending the life of an animal is taught to Australasian veterinary students. <i>Australian Veterinary Journal</i> , 98(8), 356-363. https://doi.org/10.1111/avj.12960	
In which Chapter is the Manuscript /Published work:	Chapter 5
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<ul style="list-style-type: none"> The percentage of the manuscript/Published Work that was contributed by the candidate: 	70%
and	
<ul style="list-style-type: none"> Describe the contribution that the candidate has made to the Manuscript/Published Work: 	
Designed the study and collected data at Massey University, liaised with representatives at other universities, wrote the first draft and edited subsequent drafts of the article, and responded to reviewers.	
For manuscripts intended for publication please indicate target journal:	
Candidate's Signature:	
Date:	29 March 2021
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Date:	29/03/21

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Appendix IV: Chapter 6 Statement of contribution

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STATEMENT OF CONTRIBUTION
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We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Katherine Littlewood	
Name/title of Primary Supervisor:	Associate Professor Ngaio Beausoleil	
Name of Research Output and full reference:		
Littlewood, K. E., Beausoleil, N. J., Stafford, K. J., & Stephens, C. "What would you do?": How cat owners make end-of-life decisions and implications for veterinary-client interactions. Under review.		
In which Chapter is the Manuscript /Published work:	Chapter 6	
Please indicate:		
• The percentage of the manuscript/Published Work that was contributed by the candidate:	80%	
and		
• Describe the contribution that the candidate has made to the Manuscript/Published Work:		
Designed and performed interviews (data collection), wrote the first draft and edited subsequent drafts of the article, and responded to reviewers.		
For manuscripts intended for publication please indicate target journal:		
Animals		
Candidate's Signature:		
Date:	29 March 2021	
Primary Supervisor's Signature:		
Date:	29/03/21	

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Appendix V: Study 1 Information sheet

Teaching end-of-life management of animals in Australasian veterinary schools

INFORMATION SHEET – REPRESENTATIVES/HEAD OF SCHOOL

RESEARCHER(S) INTRODUCTION

My name is Katherine Littlewood, and I am a PhD student at Massey University with previous experience as a small animal veterinarian and a strong interest in companion animal welfare. This questionnaire will contribute towards my PhD research investigating the assessment of quality of life in companion animals in order to assist veterinarians and owners in making improved end-of-life decisions. My supervisors are Dr Ngaio Beausoleil, senior lecturer of physiology in the Institute of Veterinary, Animal, and Biomedical Sciences (IVABS) at Massey University and deputy director of Massey's Animal Welfare Science and Bioethics Centre (AWSBC); and Kevin Stafford, professor in Veterinary Ethology. Kevin is co-director of the AWSBC, a fellow of the Royal Society of Veterinary Surgeons and the Australian New Zealand College of Veterinary Scientists.

PROJECT DESCRIPTION AND INVITATION TO PARTICIPATE

The aim of this questionnaire is to gather information about how end-of-life management of animals is currently taught in Australasian veterinary schools. We are particularly interested in how assessments of animal welfare status, or quality of life, are taught in the current undergraduate veterinary science curriculum. In order to carry out this research, we need a representative at each of these veterinary schools to gather the necessary information from members of staff. We would like to invite you to participate in this questionnaire as a representative of your university's veterinary science programme.

PARTICIPANT IDENTIFICATION AND RECRUITMENT

'Representatives' from each of seven Australian veterinary schools have been identified through their previous collaboration with Kevin Stafford and because of their expertise in animal welfare in a veterinary context. Individuals who agree to participate will be asked to speak to a range of teaching staff and clinicians at their respective schools, to gain an accurate picture of the topic we are interested in.

We recommend contacting the following individuals at each institution for this information:

- Paper/course coordinators or administrators of your veterinary science undergraduate programme
- Heads or coordinators of each year
- Clinicians i.e., 2 - 3 representatives for each of the four broad divisions (farm/livestock, equine, small animal, and avian/wildlife species) of animals in which we are interested
- Administrator(s) of your veterinary science curriculum database
- Student counsellors/grief counsellors who may teach into the veterinary science programme

We would like to offer each representative that agrees to assist with our questionnaire the opportunity to be a co-author on publications that are produced using the results of this study.

PROJECT PROCEDURES

Representatives from each veterinary school that agree to participate should speak to the individuals identified above in order to complete the questionnaire. Broadly, we would like to know when in the curriculum, by what method, and by whom a series of key areas of animal end-of-life management skills are currently taught. **Three** key areas have been identified: technical management of euthanasia (i.e. euthanasia protocols); end-of-life decision-making for animals; and grief management. We would like information about these areas as they apply to a range of animals, broadly divided into: (1) farm/livestock; (2) equine; (3) small animal; and (4) avian/wildlife species. Hence, it is important that representatives speak to as many individuals as possible in order to obtain a full impression of this teaching. A pilot study at Massey University has indicated that it takes approximately 20 minutes to go through the questionnaire with each individual participant.

DATA MANAGEMENT

A range of clinicians, academics, and student counselling staff will need to be consulted to obtain the necessary information to complete the questionnaire. However, to safeguard their privacy, it is important that we do not identify these individuals by name. The information obtained from this questionnaire will be used for academic publication(s) and as part of the main researcher's PhD thesis. The individuals whose responses form the basis of the questionnaire will not be identifiable in publications. The veterinary schools to which these responses pertain will be named, but not in

connection to specific results or responses. Therefore, individuals will only be identified by their role in the veterinary science programme, for example, 'clinician', 'academic', or 'student counsellor'. Additionally, broad statements will be used in publications when referring to the information collected from this questionnaire, for example, "The technical euthanasia of horses was taught by clinical staff in seven of the eight veterinary schools surveyed."

Once the questionnaires are returned, the responses will be scanned and entered into spreadsheets. The original documents will be kept on file, in a locked cabinet, until five years after the submission of the main researcher's PhD thesis, at which time they will be disposed of. Only the three individuals identified in this Information Sheet will access the original information. Any further analysis will be completed with the use of coded variables; further safeguarding the identities of individuals or institutions involved.

PARTICIPANT'S RIGHTS

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study at any point;
- ask any questions about the study at any time;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

PROJECT CONTACTS

We invite you to contact us if you have any questions about the project. The names and contact details of the PhD researcher and her supervisors are supplied below:

- Katherine Littlewood (main researcher, PhD student): K.Littlewood@massey.ac.nz
- Dr Ngaio Beausoleil (main supervisor): N.J.Beausoleil@massey.ac.nz
- Professor Kevin Stafford (co-supervisor): K.J.Stafford@massey.ac.nz

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of Massey University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director, Research Ethics, telephone 06 356 9099 x 86015, email humanethics@massey.ac.nz

The Massey University human ethics notification number is 4000015103.

Appendix VI: Study 1 Interview guide

SECTION A: THE TECHNICAL MANAGEMENT OF EUTHANASIA

The technical management of euthanasia refers to: (1) the method of euthanasia, with examples (e.g., the drug used OR firearm placement/target); (2) the route of administration, if applicable (e.g., intravenous/intraperitoneal); and (3) preparation for euthanasia (e.g., sedation, catheterisation).

1. **Do you teach undergraduate veterinary science students about the technical management of euthanasia in the following animal species?**
LIVESTOCK ANIMALS: cattle, sheep/goats, deer, pigs, llamas/alpacas **EQUINE:** horses, donkeys **COMPANION ANIMALS:** cats, dogs, small mammals e.g., guinea pigs, rabbits, rats **AVIAN/WILDLIFE ANIMALS:** chickens/waterfowl, birds, mammals, reptiles, fish, other (please specify)
 - **When in the veterinary programme is this taught?** e.g., ‘first year, first semester’
 - **Duration of teaching** e.g., 20 minutes OR 5 x lectures
 - **List the euthanasia technique(s) that are taught +/- include the preferences of the individuals asked** e.g., ‘captive bolt preferred’
 - **Are students given a chance to practise these techniques before graduation?** i.e., perform a euthanasia (Yes/No)

2. **Do you teach undergraduate veterinary science students how to kill the following animal species in an emergency situation and without the use of veterinary equipment?**
 Livestock, equine, companion, or avian/wildlife

3. **In your veterinary school’s clinical practice/hospital, is there a standard protocol for the technical management of euthanasia in the following animal species?** e.g., in a standard operating procedure document

guide

LIVESTOCK ANIMALS: cattle, sheep/goats, deer, pigs, llamas/alpacas **EQUINE:** horses, donkeys **COMPANION ANIMALS:** cats, dogs, small mammals e.g., guinea pigs, rabbits, rats **AVIAN/WILDLIFE ANIMALS:** chickens/waterfowl, birds, mammals, reptiles, fish, other (please specify)

- **If yes, give details of this protocol** i.e., the euthanasia technique(s) involved and type of document (if applicable)

guide

SECTION B: END-OF-LIFE DECISION- MAKING FOR ANIMALS

End-of-life decision-making may include: (1) the indicators (clinical and otherwise) used to make euthanasia decisions for animals; and (2) any formal tool(s) used for the assessment of quality-of-life or animal welfare status (please include: the name of the assessment tool and a supporting reference e.g., scientific journal article, etc.).

4. Do you teach undergraduate veterinary science students how to make decisions about whether or not an animal, in any of the following broad categories, should be euthanized?

Livestock, equine, companion, or avian/wildlife

- **When in the veterinary programme is this taught?** e.g., ‘first year, first semester’
- **Duration of teaching** e.g., 20 minutes OR 5 x lectures
- **How is this material taught?** e.g., tutorial, lecture, real clinical consultation
- **Are the students taught a formal assessment tool/protocol for animal welfare status OR quality-of-life in the context of making these end-of-life decisions?**
 - If YES, please give details of this tool/protocol and what is taught e.g., protocol name, reference for its source (journal, etc.)
 - If NO, (i.e., students are NOT taught a formal tool) What is taught? Please include any indicators used to make end-of-life decisions e.g., ‘inappetence of 7 days duration’

5. In your veterinary school’s clinical practice/hospital, is there a standard in-house protocol OR formal assessment tool for the

guide

assessment of animal welfare status OR quality-of-life in the following broad groups of animal species?

Livestock, equine, companion, or avian/wildlife

- **If yes, give details of this protocol/assessment tool** e.g., its name, a reference for its source (journal article, etc.), and the indicators (clinical or otherwise) it measures

SECTION C: GRIEF MANAGEMENT

Grief management refers to: (1) the provision of grief support and/or resources for veterinary clients dealing with the death of their animal(s) AND (2) the management of personal grief for the veterinary practitioner (e.g., stress-reduction strategies). Please consider a range of reasons for client grief, in addition to attachment, for example, the financial grief of farmers faced with the mass destruction of livestock.

6. Do you teach undergraduate veterinary students how to manage grief, their own and their clients, in situations involving the following broad categories of animal species?

Livestock, equine, companion, or avian/wildlife

- **When in the veterinary programme is this taught?** e.g., ‘first year, first semester’
- **Duration of teaching** e.g., 20 minutes OR 5 x lectures
- **How is this material taught?** e.g., tutorial, lecture, real clinical consultation
- **Give details of what is taught**
- **Who teaches these areas?** e.g. ‘clinicians’, ‘academics’, or ‘student counsellors’

Appendix VII: Study 2 Information sheet

A retrospective exploration of end-of-life management of old and chronically ill cats from the perspective of the owner and veterinarian

INFORMATION SHEET FOR OWNERS

Researcher Introduction

My name is Kat Littlewood. I am a Doctoral student at Massey University with experience as a small animal veterinarian and a strong interest in companion animal welfare. This study will contribute towards my Doctoral research - with my supervisors Dr Ngaio Beausoleil and Prof Kevin Stafford from the Institute of Veterinary, Animal, and Biomedical Sciences (IVABS) and Prof Chris Stephens from the School of Psychology.

Project Description and Invitation

This project explores how owners and veterinarians of old and chronically ill cats make end-of-life decisions and manage the process of putting their pet down (euthanasia). Different people have different needs and wishes for their pets, and veterinarians need to understand these. A better understanding of people's experiences of having their cat put down is likely to improve the decision-making process, maximize cat welfare, and reduce the emotional burden on owners and veterinarians. I invite you to participate in an interview which will help me understand the factors involved in this decision-making process.

Participant Identification and Recruitment

You have been invited to participate because you answered an online recruitment questionnaire as an owner of a cat in New Zealand that was put down less than 6 months ago. I am contacting those owners who also agreed to their veterinarian being approached for interview. You will be one of at least 15 owners interviewed. I will be selecting potential participants across New Zealand.

We appreciate that it may be uncomfortable for you to discuss the death of your pet and thank you again for your interest in participating in this study. No identifying information about you or your veterinarian will be included in any publically available documents that result from this study.

Project Procedures

To participate in this study:

- (1) You will indicate that you agree to participate and sign the attached consent form. I will collect this at the beginning of the interview;
- (2) We will arrange for me to conduct the interview with you at a time and place that is convenient for you;
- (3) During your interview I will ask you to tell me about your experiences of putting your cat down. The interview is expected to take around 60 minutes.

If you would like to bring a support person (e.g. a friend or family/whānau member) to your interview they will need to sign a consent form as well.

Data Management

I will sound record the interview so that I can analyse the content later. The recording will be de-identified, by changing your name, after being transcribed. You will have an opportunity to view the written transcript and make any corrections if you so wish. This may take up to **one hour** of your time, and we would expect the revised transcript to be returned to us within **two weeks** of you receiving it. If, after reviewing the transcript, you are happy with it as it is you need not return it. If we do not hear from you within this two week period we will assume that you have given permission to include the interview in the analysis.

The audio recording, research analysis, and findings will be kept on password protected Massey University computers and servers accessed only by me. The signed form indicating your consent to participate will be stored in a locked office. Information that indicates your identity will not be shared with anyone, unless with your specific consent. The data will be stored for five years and then they will be destroyed.

All reporting on findings will protect your identity – your participation will be anonymous.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- ask for the recorder to be turned off at any time during the interview;
- withdraw from the study before or during your interview or up until 1st June 2017;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded. This will be supplied as a concise document of the main conclusions derived from the study results.

Project Contacts

Please feel free to contact either myself or my main supervisor with any questions regarding this project.

Researcher

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Main Supervisor

Dr Ngaio Beausoleil
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N.J.Beausoleil@massey.ac.nz

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 16/43. If you have any concerns about the conduct of this research, please contact Dr Rochelle Stewart-Withers, Chair, Massey University Human Ethics Committee: Southern B, telephone 06 356 9099 x 83657, email humanethicsouthb@massey.ac.nz

Appendix VIII: Study 2 Interview guide

TOPIC (estimated time in minutes) <i>Keywords</i>	QUESTIONS [AND PROMPTS]
<p>Introduce Interviewer & Research (10) <i>About interviewer and project</i></p> <p><i>Outline of interview procedure</i></p> <p><i>Opportunity to withdraw, break</i></p> <p><i>Written transcript, summary report</i></p> <p><i>Consent</i></p>	<p>Kat Littlewood, PhD Candidate at Massey University. Interview is part of PhD research. We would like to find out how owners and their veterinarians are currently making EoL decisions.</p> <p>I will first start off with some background questions. Then I would like to discuss cats in general, before moving onto talking about your own experiences with your cat. I would be happy to explain more after the interview. I will ask number of questions - please answer what comes to mind. No right or wrong answers. Want to hear what you think. I may take notes – so I don't interrupt you if something you say I would like to hear more about later in the interview. If you think of something you think is important, but I don't ask about it, you are welcome to bring it up yourself.</p> <p>If I ask something you don't want to talk about, you can say you don't want to answer. You can stop interview at any time. If you need to take a break during the interview please say so.</p> <p>You will have an opportunity to view the written transcript and make any corrections if you wish. This may take up to one hour of your time, and we would expect the revised transcript to be returned to us within two weeks of you receiving it. If we do not hear from you within this two week period we will assume that you have given permission to include the interview in the analysis. If, after reviewing the transcript, you are happy with it as it is you do not need to return it. You will also receive a summary of the project findings when it is concluded.</p> <p>Information Sheet & questions. Consent Form signed. I would like to record interview – it will be transcribed afterwards, but your responses kept anonymous. OK to record interview? Can we begin? Start recorders.</p>
<p>A: Warm up questions (2)</p>	<p>What is your previous experience with animals?</p> <ul style="list-style-type: none"> • Farm/livestock experience? • Have you always had a cat? How many?

TOPIC (estimated time in minutes) <i>Keywords</i>	QUESTIONS [AND PROMPTS]
<i>Experience with animals and children/family</i>	<ul style="list-style-type: none"> • Other pets/animals they have access to or experience with? Who is in your household? <ul style="list-style-type: none"> • Children? other animals?
B: Experiences with euthanasia and death. Expectations of longevity (2)	How long do you expect cats in general to live for? What do you consider an ‘old cat’ to be? <ul style="list-style-type: none"> • How long did you expect your own cat to live for? [before/after diagnosis – if applies] Was this your first experience with putting a pet down? <ul style="list-style-type: none"> • Have you ever had to put a pet down before this?
C: About their cat (5)	Tell me a few things about your cat [name of cat] – cat’s background <ul style="list-style-type: none"> • What was your cat’s name? • How old was s/he? [cats gender] • When did you get her/him? [duration of ownership] • Was s/he desexed/neutered? We are now going to focus on your <u>experiences</u> with your cat. Tell me about what was going on with your cat. <ul style="list-style-type: none"> • How did you find out s/he was ill? [or not doing so well] • Do you remember when you first considered the possibility of putting your cat to sleep?
D: <u>Why</u> did owner decide to euthanase cat? (timing) Overall factors involved in decision e.g. decline QoL, etc. Was there a major factor? How did animal’s dx impact on owner’s life?	<u>Why</u> did you decide to put down your cat? <ul style="list-style-type: none"> • What factors involved in decision? – what was most important factor? Why? • How long did it take for your pet to go downhill? [Did you have to make a quick EoL decision? [why/why not]] • How old was s/he when you were given the diagnosis? Did the age of your cat factor into your decision? • How much were you expecting your cat’s treatment to cost? How much did the cost influence your decision? • What was a typical day like for you and your cat after s/he became ill or started to decline? How was it different? • Was there anything at home that you started to do differently or changed? How did you handle this? • Were there any sacrifices made by your or your family for your cat?
E: What was vet’s role in the EoL decision? (6) <u>How</u> was EoL decision made? Who did they consult with to make this	Who did you talk to about your decision? Whose advice did you seek? <ul style="list-style-type: none"> • Why did you ask this person? • Do you remember any reactions from other people to your cat’s illness or age? How important was your veterinarian’s advice in your decision-making?

TOPIC (estimated time in minutes) <i>Keywords</i>	QUESTIONS [AND PROMPTS]
decision e.g. friends, family, internet groups, veterinarian	<ul style="list-style-type: none"> • What options were you given by your veterinarian? Did they change how you decided? • What role did they have in your decision? • How long have you known your veterinarian/practice? • How much did your relationship with the veterinarian influence your decision? • Do you feel that your vet agreed with your decision?
F: The euthanasia event (3.5)	Can you tell me about the day that [cats name] died? <ul style="list-style-type: none"> • Tell me about the euthanasia event • How did you find the euthanasia process? Any positive experiences? • What was the decision-making experience like? What (if anything) could have helped to make that decision easier?
G: How did the owner assess QoL/welfare before and leading up to this decision? (4.5) E.g. not eating, not drinking, not as active. Are they making these decisions based on QoL assessments?	How did you decide on/evaluate how your cat was doing? (Its QoL/welfare) <ul style="list-style-type: none"> • What does good QoL for your cat mean to you? How did you assess your cats QoL? • What was the most important factor in your cat's QoL? [What did your cat enjoy? What was most important to him? Did this change? Did it affect decision?] • How would you rate your cats QoL in the last 2 weeks before you put him/her to sleep? Why do you say that? • How would you rate your cats QoL in the last year before you put him/her to sleep? • What were your expectations regarding your cat's diagnosis [prognosis] or his/her age and their life expectancy? How did you discuss your cats QoL with your vet? <ul style="list-style-type: none"> • When did you start having these QoL discussions? • Did your vet give you any like things that might happen or any idea of things to look out for?
H: How attached is the owner to their pet? (1) Will attach affect answers?	How close to your cat were you? What makes you say this? <ul style="list-style-type: none"> • How did other people (friends/family) react to the loss of your cat? Did they understand your loss?
I: Expectations of veterinarian (1.5)	What were your expectations of your veterinarian in terms of managing animal euthanasia? <ul style="list-style-type: none"> • How much knowledge and experience would you expect them to have to perform euthanasia? • How important is it for vets to be taught EoL management (in vet schools)?
J: Ending on a positive note (1.5)	What would be a 'good' pet euthanasia for you? What does it mean for an animal to have been put down 'well'?

TOPIC (estimated time in minutes) <i>Keywords</i>	QUESTIONS [AND PROMPTS]
K: Wrap Up <i>Possible additions, possible follow-up</i> <i>Possible questions about the project</i> <i>Difficult subject</i> <i>Thanks</i>	<p>It seems like we're coming to the end of our discussion, but I just want to check my notes... ('Could you say a bit more about...')</p> <p>It seems we have covered main things I had in mind, but want to be sure you've told me everything you think I should know. Is there anything you would like to add? If you remember something later, please don't hesitate to contact me.</p> <p>Do you have any questions about the PhD project or the further processing of information you have provided? I understand this may have been difficult for you to talk about.</p> <p>Are you going to be OK? You have been so helpful; I really appreciate the time you have taken to talk with me. Thank you very much.</p>