

Exploring horse owners' understanding of obese body condition and weight management in UK leisure horses

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Abstract

Background: Equine obesity is considered one of the most serious welfare concerns in UK leisure horses, yet little is known about how horse owners conceptualise their horse's weight as part of its health, or how they plan and carry out weight management.

Objectives: This study aimed to further our understanding of leisure horse owners' perceptions of equine health and awareness of excess fat in order to clarify our understanding of successful strategies for managing equine weight.

Study design: This study used a qualitative research methodology.

Methods: Data comprised 16 threads from online UK equine discussion fora, 28 individual interviews with leisure horse owners, 19 interviews with equine professionals such as vets and nutritionists, and two focus groups with a further 21 horse owners. Data were anonymised and analysed using a grounded theory approach.

Results: Awareness of excess fat was a complex issue, with owners finding it difficult to differentiate equine obesity from the shape they thought the horse was "meant to be", particularly if the horse was a heavier breed such as a native pony or cob. Owners were not necessarily "aware" or "unaware" of fat, but instead equine body fat was constructed as an integral part of the equine body. For example, owners might say that they thought their horse was an ideal weight yet describe their horse's overall body shape as "like a Thelwell". When owners became aware of fat as a changeable part of the horse's body, and/or a threat to health, the presence of fat was articulated as a strong-willed adversary, and weight management was considered a "battle" or "war". Owners found weight management difficult because they perceived that it had immediate negative welfare implications for the horse, and this therefore interfered with their preferred ownership practices and the horse-human relationship.

Main limitations: Interview data are self-reported, and people may not always do what they say they do.

Conclusions: This study has provided valuable insight into how owners conceptualise weight and weight management, yielding important information about

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communicating with owners about weight, tailoring weight management strategies, and promoting positive welfare.

KEYWORDS

horse, obesity, behaviour change, horse-human relationship, qualitative research

1 | INTRODUCTION

Equine obesity is considered to be one of the UK's most serious equine welfare concerns, affecting somewhere between 31% and 54% of the UK horse population.¹⁻⁶ It has been well studied in terms of the factors that play a role in the risk of equine obesity,^{5,7,8} the physiological effects of excess weight on the horse⁹⁻¹² and methods for reducing weight.¹³⁻¹⁵ Weight management in an equine hospital setting is usually relatively straightforward and achievable;¹⁴ however, most equine obesity and its management occurs outside the clinical setting, in the complex world of horse ownership and care.^{1,16} The population of "leisure horse owners", that is, people who own horses as a hobby, is increasing,¹⁷ and for these owners, the horse-human relationship and the provision of care to the horse are central to horse ownership.¹⁸

For leisure horse owners, horse ownership is in some ways similar to ownership of other companion animals, such as dogs and cats, in that it may be focussed strongly on the relationship with the animal and spending quality time with it.¹⁸ However, such relationships may bring particular problems. In other companion animals such as dogs, it is well recognised that obesity is intricately linked with the human-animal bond; for example, owners of obese animals are also more likely to "humanise" their pets, blurring the boundaries between human and animal, such as allowing dogs to share food and sleep in the human's bed.¹⁹ Weight management in home settings is known to be problematic,²⁰ and even when owners manage their dogs to meet their weight loss target, the dogs may later be allowed to regain that weight.²¹ In canine obesity, the owners' style of "parenting" their animal and the human-animal relationship are considered key in finding ways to address animal obesity.²² To date, little research has examined the human-horse relationships in the context of obesity and weight management.

Research to understand owners' views on appropriate weight in horses has shown that owners consistently underestimate their horse's weight.^{5,6,8,23} They consider a horse's ideal weight to be affected by the "work" that the horse is engaged in; for example, it may be considered appropriate for a horse used for showing to be fatter than a horse used for eventing.¹⁰ However, beyond this, little is known about how owners might think about equine weight and its management. A better understanding of owners' views and concerns about weight and its management will assist equine professionals to help owners better manage their horses, thus, improving equine welfare.

This study sought to understand leisure horse owners' views on equine management and health, using qualitative methods. Furthermore, the study examined how decisions are made in terms

of managing weight, in order to aid the development of strategies to help owners to achieve weight loss and manage their horse's weight longer term.

2 | METHODS

This study was designed to yield in-depth understanding of owners' views and experiences using a qualitative approach. Qualitative methods are particularly useful in instances where rich experience-based data are sought in order to better understand a phenomenon.²⁴⁻²⁶ While it is beyond the scope of this study to discuss the advantages of this approach, qualitative methodologies have been well-used in veterinary sciences, providing valuable insight to a range of phenomena,²⁷⁻³¹ and their use is well discussed in multiple papers.^{26,32} This study used qualitative data collected in three ways: from online open-access horse discussion fora, individual interviews and focus groups.

2.1 | Discussion fora

Existing discussion threads about equine obesity were collected from three well-used online discussion fora, frequented by leisure horse owners. To be included, fora needed to be open-access, UK based, regularly used and searchable. The three fora were searched using the terms "obese", "overweight" and "fat" between January 2015 and May 2016. Threads were excluded from analysis if they focussed on issues which were not the primary focus of this research; for example, those concerned with rider weight. This left 17 discussion threads with 646 individual posts, which were anonymised prior to analysis alongside the other data.

2.2 | Interviews

Individual interviews were conducted with leisure horse owners across the UK, between December 2016 and March 2018, until saturation was reached (ie until no new themes arose from the data); this was felt to have occurred with 28 owner interviews (see Supplementary Item 1 for participant demographics). Owners were recruited via social media and advertisements in tack and feed shops. The study targeted horse owners who were mainly responsible for their horses' care. Participants were invited to take part in a general interview about "horse health" rather than obesity specifically. The invitation was worded in this way to ensure that obesity was explored as an aspect of health. The topic

guide used in the interviews is available in Supplementary Item 2. Interviews were semi-structured and topics were covered according to the way in which participants discussed their situation. Obesity and weight management were only explored once owners initiated this topic; it was discussed in all but two interviews. Nevertheless, all interviews (even those not discussing weight) were included in the analysis because they provided useful material for wider consideration of equine care. Five interviews were conducted by phone, with the remainder occurring at the horse's yard, often with the horse present for at least some of the time. In these instances, participants were able to refer to areas of concern on the horse's body or show the researcher relevant items such as the horse's feed contents or turnout area. This prompted richer discussion than was sometimes possible on the phone, particularly during times when the respondent was unsure about the horse's current body condition and could discuss it in context with the researcher present. Interestingly, phone respondents sometimes chose to send pictures of their horses and the horse's environment, and one conducted a tour on video-conferencing software prior to beginning the interview. These media were used as reference points to encourage discussion.

Nineteen equine professionals including four first-opinion vets, six nutritionists (five of these from previous study about laminitis), four farriers, three yard managers, an equine welfare charity manager and a behaviourist were also interviewed about professionals' experiences with equine weight management with horse owners (Supplementary Item 3).

2.3 | Focus groups

Two focus groups were undertaken with a further 21 horse owners who were already thinking about, or currently, managing their horse's weight (Supplementary Item 4). Data were gathered on how owners planned and negotiated weight management strategies. These were conducted at the Equine Practice, University of Liverpool, during June 2018.

In the interviews and focus groups, all participants consented prior to taking part, and discussions were audio recorded, transcribed and anonymised prior to analysis (eg human and horse names were altered, as well as any other comments which might provide identification of a participant, such as discussion about specific locations, equine professionals, unusual equine markings, etc.).

2.4 | Data analysis

All data were imported into NVivo 10, a software platform for managing qualitative data. Data were coded using a process based on ideas taken from a constructivist Grounded Theory approach as described by Charmaz³³; for example, collecting data concurrently while performing the analysis, and allowing themes to arise from

the data rather than imposing existing ideas or frameworks onto the narratives.

In this analysis, close reading of the texts was initially performed, with the researcher writing notes about first impressions and ideas which appeared to be meaningful. On second reading, themes were developed iteratively through the creation of "categories" designed to label the meanings and constructions behind the participants' words; as more data were collected and analysed, these categories were refined and grouped together under wider headings. For example, participants' views on assessing body condition were grouped together in the first instance under one category. Further analysis within these distinctions identified differences between how condition as a concept was viewed, and the category was broken down further, for example by distinguishing between subjective and objective weight assessment.

Combining data from different sources (discussion fora, interviews and groups) provided a useful means for comparison. Threads from the discussion fora were created when forum contributors were struggling with a current issue such as deciding on a weight management strategy. In contrast, interview data often provided retrospective accounts of recent experience. Furthermore, discussion fora comprised peer-to-peer discussions and multiple-participant conversation, leading to exchanges of and co-production of ideas. Interviews produced data about the thoughts and feelings of the individual being interviewed, without the impact of others' views. The interviews and focus group discussions provided the opportunity to focus participants on particular elements of interest, such as how body condition was perceived and managed in real life, which is not possible when using naturally occurring data such as that reported on online discussion fora.

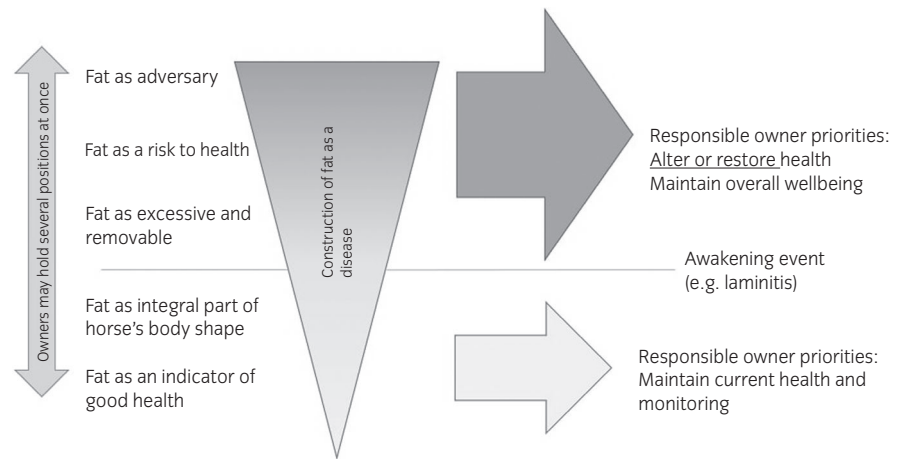
As the themes were refined, the links between the themes were also established in order to produce a better understanding of how owners think about horse care, and how weight and body condition fitted into their understanding of horse health. While the overall conceptual map of these relationships will be shared elsewhere,³⁴ the results section here focuses specifically on a vital part of the resulting picture: how owners perceive their horses' bodies, how they came to understand that their horses were overweight and how they approached managing their horse's weight.

3 | RESULTS

Managing horses' bodies in order to promote optimum health was constructed by horse owners as one of the key activities of being a responsible horse owner, and horse care rituals such as grooming and feeding were situated as acts which were central to building and maintaining the horse-human relationship over time.

However, owners' constructions of body fat on their horses were complex; fat could be constructed as an indicator of health, an integral part of the horse's shape or a sign of disease. Furthermore, each of these constructions was not necessarily held in isolation; owners' narratives showed that they may refer at different times in an

FIGURE 1 Thematic diagram of horse owners' construction of equine body fat



interview to conflicting views of their horse's shape and body fat. Understanding that a horse had harmful levels of body fat was not, therefore, a simple case of an owner moving from being "unaware" to an "awareness" of fat, but was instead a complex, dynamic process of altering the owner's construction of fat and body shape in relation to their horse's health (Figure 1).

This section will first briefly outline how horse owners talk about the process of caring for their horse's bodies as a part of responsible ownership and in creating the horse-human relationship, before describing the way that body fat can be constructed in multiple, sometimes opposing, ways. We will then describe how owners might alter their constructions of equine body fat as they shift their perception of their horse's body, adapting their own views about wider horse health and wellbeing as part of this process. Throughout, we will consider how the language used by horse people is performative in shaping and reflecting these different constructions of equine fat.

3.1 | Care of the equine body: the construction of good ownership and good health

Owners described horse ownership primarily in relation to two interlinked concepts: looking after their horse's body and building and reinforcing their relationship with the horse. These concepts were closely tied because owners considered that acts of caring for the body (feeding, grooming, creating a clean environment) also reflected caring about the horse and, therefore building or reinforcing their relationship with it. In this context, horses were constructed as relatively passive recipients of care, and owners constantly renegotiated and modified different aspects of that care in order to produce what they saw as good health. Optimum health in the horse was, therefore, perceived as mirroring the quality of care provided. The horse's body was the physical manifestation of good or responsible ownership practices.

When describing what it meant to have a "healthy horse", owners primarily described their horses' body mechanically, using visual indicators provided by their horses' coat shine, eyes, condition (comprising both muscle and fat) and general demeanour/mood to denote that the body was functioning optimally. Some owners chose

specific sentinels of health which they could monitor closely to ensure ongoing health, for example, droppings and urine:

P10: "this is going to sound very silly, but I like to see the colour of his poo, consistency, and, yes, see how much, when he wees as well so I can see his- that really sounds awful...Urine stream, colours, know how much he drinks, is he drinking, and all that, so definitely everything about just caring about him."

Owners used a number of technologies to assist with the physical monitoring of the horse, including CCTV to monitor eating and sleeping behaviour, the use of thermal cameras to assess whether the horses were warm enough, conducting frequent faecal egg counts and use of a wearable activity tracker which monitor the horse's sleep patterns overnight. Owners described these practices as symbols of their responsible ownership, reflective of their careful engagement with their horse's health.

Monitoring to make sure that the horse did not become *underweight* was considered an obvious part of this standard care, with underweight horses viewed as reflecting poor welfare and lacking good ownership practices. Therefore, a lack of body fat was a reason for seeking help urgently, for example, from nutritionists:

P28 (Nutritionist): "I certainly had more over the last couple of years who are worried about how thin their horses are, though they're not actually over-thin"

This meant that some level of equine fat was perceived as desirable; professionals and owners alike commented on how some people preferred their horse to appear plump, perceiving this a sign of good health, and therefore good ownership. This is reflected in equine culture and language where the descriptors "looking well" and "show condition" can connote both good health and, at the same time, excessive weight.

However, while monitoring the horse to ensure it did not become too thin was considered an integral part of responsible ownership, monitoring for overweight was not usually considered by owners, unless the owner had been previously made aware of excess weight on their horse. For many owners, therefore, responsible ownership practices simply involved ensuring that their horse carried enough

body fat to signify “wellness”, but without regard for body fat which went beyond this level.

3.2 | How owners conceptualise body shape, rather than fat

With ownership practices centred on keeping the horse looking well-cared for, owners displayed a close familiarity with their horse's bodies which enabled them to closely monitor health through the objective sentinels described above, yet simultaneously meant that it was hard for them to view their horse's whole body objectively, particularly in relation to body shape.

For example, many owners described difficulty differentiating the *shape* of the horse from the *fat* on the horse. There was a lack of certainty about the relationship between the breed of the horse and its ‘natural’ shape, particularly for heavier-built breeds such as cobs, native ponies and draught horses. Thus, for some breeds, equine fat was invisible to owners because it was believed to be a feature of their breeding:

P24: “I thought that was just her build, thought she was just a big chunky cob”

This was further complicated by the fact equine fat is commonly deposited in horses in the same general areas in which muscle development is prized; for example, the crest of the neck along the back or “topline”. While condition scoring systems clearly indicate the nature of these fatty deposits, the interviews revealed confusion over whether that was “just the horse's shape” or whether it was muscle, or fat. For example, P19's discussion with husband (P20) about her gypsy cob referenced uncertainty about how to interpret what she could clearly see:

P19: “I go “oh she's got a bit of a crest”, then I'm like “I know that the bigger cobs are supposed to have that crest shape, but is that fat or is that just the shape?” so I have these overthinking internal dialogues with myself”

P19: “Obviously she's a cob, and they're supposed to have a bit of an apple bum, but....”

P20: “....not an orchard!”

P19's case provides an example of the internal confusion an owner might face, and the use of humour, rejection of others' opinions and contradicting thoughts. A related example is shown through P22's narrative, demonstrating the expectation that the natural shape of the animal might incorporate the idea of obesity. However, P22 was able to place the fat pads on her horse within a fat continuum which rendered the size of her cob “not ridiculously obese” despite scoring the horse a 4 or 5 (out of 5) on the condition scoring scale:

P22: “She's not ridiculously obese for her sort of cob but she's not slim at the moment. Here is definitely fat [indicates shoulder fat pad].... If you're using the one to five [condition score scale] I would reckon they're probably a four, on her way to a five”

3.3 | Fat and the equine body shape

Owners are often considered to be “unaware” of equine body fat, and unable to tell when horses are overweight.^{1,16} However, importantly the examples shown above depict a level of awareness: owners' language and narrative show that they have constructed their horse as a “*big chunky cob*” or “*bigger cob*”, and their language in the quotes above reflects their understanding that this carries the possibility of an animal carrying fat as a part of its body shape. They have some awareness of the fact that their horse might be overweight, but they do not construct their idea of their horse as an animal with a level of fat which should be acted upon. The move towards constructing the horse's body as covered with a potentially *harmful* level of fat was complex and not linear.

This complex construction of fat as simultaneously present but integral to the horse was reflected in the language used by owners and professionals alike: humour, euphemism and similes were employed by both owners and professionals. Horses were described as “chunky”, “beefy”, “blubber”, “podgy”, “waddling” and “porky” among others, even if the owner also suggested to the researcher that they did not think the horse was technically overweight. Words which were not meant to be humorous, but nevertheless provided well-used euphemisms around fat included phrases such as “looking well”, “wintering well”, “rainbow neck” (describing a crest), “in show condition” and having “been on the grass”; interestingly, these terms could be used interchangeably to denote good health, or when said with a hint of irony they could denote obesity. It is notable that no examples of such language were reported for thin, underweight, or diseased horses.

These examples clarify how the presence of body fat was constructed as an integral part of body shape, meaning that while horse owners were not completely “unaware” of their horses being fat, they viewed fat as a part of their horse, sometimes even as an integral part of its identity as “a big chunky cob”. This idea was also reflected by some professionals:

P31 (Vet): “Actually quite a lot of people are aware, I think deep down they're aware that their horse is overweight”

P28 (Nutritionist): “I'm aware that there's research to show owners aren't, but I'd say ... maybe this is my subsample bias. The owners I see, I would say there's very few who are completely in the dark about their horse's condition”

This finding suggests that realising a horse has excessive levels of fat is not a case of “becoming aware” of fat, but rather of owners changing their perception of their horse’s body shape to allow them to separate the presence of fat from the horse’s actual body, perceiving the fat as unwanted rather than “normal”.

Unfortunately, it was often the case that the owner was only able to separate out their construction of body fat vs body shape, once the horse had lost weight. This is shown by P24, whose horse lost 100kg following an episode of acute laminitis:

P24: “A new slim horse emerged. When the vet said “she would have withers [if she lost weight]” I thought, “really? Surely that’s just how she is.... It was very, very obvious when it had gone and we found her withers, which was a nice surprise” (mid-dleweight cob)

3.4 | The potential danger of equine body fat

Despite this complex construction of fat as integral to equine shape, and the constructions of obesity as positive, funny or ambiguous, owners did understand that too much fat *could* be associated with disease if it reached certain levels. The primary concern for owners about excess fat was the link between laminitis and obesity:

P14: “I was so worried about him getting laminitis when I first realised how fat he was”

Importantly, this participant became worried about the risk of illness only once she had come to the realisation that her horse was fat; this suggests that she already had knowledge of the danger of laminitis as a result of obesity but that it only became relevant when she realised that her horse fulfilled one of the predispositions for the disease by being fat. This is reflected in the rest of her narrative, as well as the descriptions given by other owners of their own concerns about weight.

Nevertheless, despite understanding laminitis to be a serious disease, many owners found it so difficult to identify excess fat on their horse’s body shape that they could not identify that their horse was at risk of health issues as a result of its weight. This presented a significant frustration for equine professionals:

Farrier 5: “they say, “It had an attack [of laminitis]” like a ninja came in ...It’s not an attack. It’s something that’s built up. Really, you could have seen it coming three months ago because your horse has been getting fatter and fatter and fatter. The amount of people that are like, “It just had an attack. It came out of nowhere. One minute it was alright.””

As a result of this owners’ perceived lack of attention to weight, several equine professionals—particularly farriers, perhaps because of

the frequency of their visits—expressed frustration about the difficulty in trying to alter owners’ perceptions of their horses’ bodies, particularly because the animals often ended up with painful conditions such as laminitis because of this.

3.5 | Realisation of excess fat and a threat to health

Commonly, a move towards understanding that the horse had reached an unwanted level of body fat occurred when an obesity-related event occurred. For example, these events included the horse becoming ill (eg laminitis), when items no longer fitted the horse (girths and rugs, for example) or when a respected professional drew the owner’s attention to their horse’s weight:

P16: “it was really [my vet] telling me that, “Look, that is a fat pad right there,” and me going, “Oh, gosh, yes, it is,” for me to actually then look back and think, “Oh, God, they have actually been creeping on.””

In particular, endocrine-associated laminitis prompted weight re-assessment, and recovery from a laminitic episode frequently required weight loss. It was relatively uncommon for owners to realise that their horse was at this level of overweight on their own, without a trigger.

3.6 | Reframing the equine body shape: fat as an adversary

Recognition of obesity in the horse owner forced a reconceptualisation of their horse’s body. Owners undertook a cognitive shift towards reframing the horse’s body as “unhealthy” where previously they had perceived its shape to be reflective of health, and their good ownership practices. Fat was now understood to be present overlying the horse’s actual body shape. Perhaps an important consequence of this was that owners understood that body fat was removable.

This shift in perception was reflected linguistically. In line with human discourses about fat and weight loss,³⁵ the light-hearted humour previously used to describe fat was replaced by the language of ‘struggle’ as efforts to reduce weight were implemented.

P11: “Obviously, I just have to watch his weight being native. It’s a constant battle with keeping him not too fat.”

Language which suggests an ongoing “battle” reflects the environment in which horses are kept. Rich dairy grasses, mild winters and reported lack of grass-free management options on livery yards all created an environment which fosters obesity in the domestic equine. In this environment, horses became “good-doers” able to survive on very little:

P23: "having read up on metabolic syndrome, if anybody asked me what it is, I'd say, "It's Native Pony Syndrome [laughs]. ... good doer syndrome!"

Once an owner saw their horse differently and had become aware of fat as a potential health threat for their horse, there was often an expression of guilt at having let their horse become overweight.

3.7 | Fighting obesity

When owners reached a point of realising that their horse's body was carrying excess fat, they needed to refine their ownership practices to take into account their altered construction of the horse's health status, and find ways to reduce body fat.

Equine care practices were deeply embedded in owners' ongoing relationship with their horse, as well as their own beliefs, habits and the practices facilitated by the local environment (eg the livery yard). Therefore, changing care practices to account for this new health issue was not always easy.

Weight management was usually perceived as doing less of the things that owners thought their horses enjoyed and doing more of the things that they considered were negative for the horse—less food and more exercise. For the leisure horse owner, these strategies carried concerns: While the horse's health might be improved by having less to eat and more exercise, owners considered that the horse's welfare might be compromised. Exercise, whether introducing it or increasing it, was often perceived as a negative experience for the horse, and potentially risky for the owner. Restricting access to food held the potential to generate unwanted behaviours such as biting, jumping out of fields, misbehaving when ridden and causing colic or gastric ulcers:

Vet 39: "people are worried about stomach ulcers. I think people are more worried about stomach ulcers, and the fact that from a welfare – that they should be eating something most of the time, than they are about... laminitis and things like that."

Reducing the horse's wellbeing and welfare directly opposed owners' usual aims of being a "responsible" horse owner who created a life for their horse in which it was happy and well-cared for. Furthermore, the unwanted behaviours from horses undergoing weight management were sometimes damaging to the horse-human relationship. It was, therefore, difficult for owners to implement and maintain over the lengthy time needed to reduce weight because they felt they needed to perform tasks which were opposing to their horse's welfare, their relationship with the horse and their beliefs about horse care.

Owners also described the need to find solutions which worked within the environment in which their horse was kept. For example, solutions that were allowed by their livery yard. Livery yard rules, including managing the available land as well as managing the horse,

have profound effects on the strategies that horse owners considered when managing weight:

P28 (nutritionist): "...owners saying, "I'm at livery yard, I've tried others in the area, it's by no means perfect but it's the best for me. I can't do this, this and this I'm going to have to work around it." I get that quite a bit."

Owners reported that yards often specified the area where the horse had to be turned out, the type of forage available (eg some yards provided only haylage), types of exercise (eg disallowing lungeing) and sometimes disallowed specific weight management practices such as hay soaking. Many yards did not make provision for grass-free or low-grass areas for overweight or laminitic horses, meaning that the horse owner had to negotiate with the livery manager, or find ways of managing weight within the constraints of what was provided.

As a result of these concerns, decision making around weight management was often based on choosing available options in a trial-and-error process, rather than making considered and informed choices in advance of weight management. Many owners reported trying lots of different options according to their needs, the horse's needs and the yard's framework; these options were also used in tandem with one another, rather than relying on any one particular process to improve equine weight.

Owners described having found suitable and sustainable weight management practices when they found care options which were practical for them to carry out, within the restrictions imposed by their yard, and which were perceived as high welfare or enjoyable for their horse as an individual—thus, strengthening rather than harming their relationship with their horse. For example, many owners enjoyed weight management processes which enabled them to build low-grass environments which owners considered to be high welfare, such as the use of track systems (low-grass tracks around the outside of the field, which purport to encourage horses to move more, in a herd, than standard turnout paddocks); sheep to reduce the amount of grass without limiting the horse; or exercise in ways which was enjoyable to both horse and owner.

Throughout the data, 40 weight management options were volunteered by owners (Table 1). These were combined into a decision-making tool for horse owners to manage their horses' weight within their yard, and in ways which will work for that owner and that horse as individuals; this is freely available at: <https://www.liverpool.ac.uk/media/livacuk/equine/documents/Equine,Weight,Management.pdf>.

4 | DISCUSSION

The key themes that emerged from this study showed a complex process in the conceptualisation of equine obesity, from viewing fat as a symbol of health, to constructing body fat as separate from the horse's actual body and eventually finding weight

TABLE 1 Weight management strategies used by owners in this study, divided by type

Type of change	Action	
Reduce grazing	Strip graze	
	Starvation/bare paddock/yard turnout	
	Woodland turnout (low grass/grass free)	
	Track system	
	Rotate grazing based on Body Condition Score (eg thinner horses eat grass down first before fatter ones are allowed in)	
	Equicentral system (grass management system)	
	Co-graze with sheep/cattle	
	Co-graze with more horses	
	Grazing muzzle	
	Graze the horse with a bit in its mouth	
	Stable horse for some of the time	
	Alter supplementary feed	Reduce bucket feed
		Reduce volume of supplementary forage (hay/haylage)
Change type of supplementary forage (eg hay instead of haylage, hay replacer)		
Oat straw as supplementary forage		
Soak supplementary forage		
Slow intake of forage (hayball, trickle net)		
Slow intake of bucket feed (eg treat ball)		
Increase exercise	Ride	
	Lunge	
	Horsewalker	
	Long rein	
	Drive	
	"pony" from another horse (ride and lead)	
	Agility training	
	In-hand schooling	
	Track system in paddock	
	Turnout with youngsters/bossy horses in paddock	
	Sharer to help with exercise	
	Join events such as #hack1000miles, organise group hacks on yard	
	Track exercise with app	
	Pay someone to ride the horse	
	Pay someone to do chores so owner has more time to ride horse	
	Send horse to trainer	
	In-hand hacking or jogging with horse	
Use metabolism	Don't rug in winter/rug less frequently	
	Don't use fly rugs/allow horses to move to get flies off them	
	Clip the horse in winter	
	Allow for weight loss in winter/ribs in spring	
	Split forage into multiple portions and spread across paddock to encourage foraging	

management a "battle". This highlights two specific problems surrounding equine obesity: that owners find it hard to tell when their horse is overweight; and that even when they do realise the horse is overweight, it is difficult for them to alter their horse's weight within the UK's obesogenic environment. While horse owners spoke at length about their careful control and management of their horse's health, these issues were related to things happening which defied the horse owner's control of equine care practices: the horse gained weight in a way which was invisible to owners. Management of weight was often inhibited because of the practicalities needed for weight management processes, which were hard to carry out because they went against other priorities of ownership.

Research with small companion animals has also found that owners struggle to identify when their animals are overweight,³⁶⁻³⁸ are confused about required nutrition and therefore find it difficult to find ways to manage weight adequately,³⁹ and even found that training does not help owners to assess their own animals' weight status.⁴⁰ The results of this study echo the difficulty identifying obesity and managing weight found in small animal research. However, this study also shows how the construction of "responsible ownership" practices are vital for considering both how owners might miss body fat as it 'creeps' onto their animals, and how owners might change their management to reduce weight.

The concept of "responsible ownership" was originally identified in relation to companion animals; this concept describes, for example, how dog owners are engaged in a dynamic process of negotiating their own sense of duty, tolerance and morality with what is "best for the dog".⁴¹ In this study, horse owners were deeply involved in carrying out rigorous care practices as part of a construction of their own responsible ownership; these practices also allowed them to foster their relationship with the horse by making sure that it was happy and well cared for. This commonly included monitoring for underweight, but not overweight. As a result, despite their best intentions to be "responsible" horse owners, body fat which was initially symbolic of good ownership practices and health was allowed to build unchecked until it reached unhealthy levels. Once a trigger (such as illness) occurred, owners had to reassess their view of equine health as well as their care practices, changing their perception of what was "best for the horse".

As a result of owners' perceived lack of awareness of fat, responsibility is often placed on vets to identify overweight animals and promote awareness of obesity, for both equine and small animals.^{2,42} However, given the complex and ongoing process of recognition of equine body fat found in this study, and the lack of contact time that many owners may have with their vets, it is possible that vets are not ideally placed to manage this process. Equine owners are likely to see farriers and other horse-care professionals more regularly than vets and therefore they may be well-placed to work with owners to highlight changes in the weight of their animal. Indeed, farriers are sometimes overlooked as information givers,⁴³ yet this study found that they were very keen to work with owners to improve weight management. In small animal settings, veterinary nurses are often considered to be

the most appropriate professionals to run specialised weight management clinics and discuss weight with owners³⁹; veterinary nurses, like farriers, are under-utilised in weight management in equine medicine.

In terms of managing excess body fat, this study showed that owners found it difficult to make change to their horse's care practices. Human public health studies have repeatedly shown that human behaviour is influenced by factors such as the social and physical environment, our ability to perform actions and our habits, as well as our motivation and intention.⁴⁴⁻⁴⁶ This theory is reflected in canine obesity studies, where dog owners were found to feel disempowered by the perceived magnitude and difficulty of the task of making changes to weight,³⁷ and were hampered by their own time availability, habits and relationship with their dog.⁴⁷

Modern approaches to human obesity, therefore, favour tailored behavioural interventions such as cognitive behavioural therapies,⁴⁸ or step-by-step motivational programmes such as Weight Watchers^{49,50} (now "WW") or "Couch to 5k".⁵¹ Instead of focusing on the reasons for reducing weight, these programmes instead focus on facilitating the process of change, by helping the participant to navigate the environment and changes needed in their everyday lives. Aligning with this approach, this study also found that horse owners who wanted to make changes found it hard to do so for a wide variety of reasons related to their environment, and their own habits and beliefs around equine care and their relationship with their horse.

In canine obesity, weight management which was individually tailored to the owner and dog is most successful at encouraging individual owners in achieving weight loss in their dogs.⁵² This aligns with human behaviour change science because approaches which are individually tailored can be empowering, by making change seem easier: they can be individually suited according to the person's habits, social and physical environment, physical ability and motivations.⁵³ This study found that horse owners felt disempowered by the prospect of excess body fat in their horse and the need to make changes. Therefore, tailored strategies are ideal for horse owners, helping them to find changes which will suit their yard environment, their horse and their lifestyle. The decision-making guide created as a result of this study therefore aims to help empower owners to create tailored weight management strategies which suit their individual situations.

5 | CONCLUSION

This study has highlighted multiple challenges around horse owners' management of equine weight, examining the complex construction of body fat as an integral part of equines. In order to alter excess weight, owners must first recognise that their horse has gone beyond the constructed idea of "healthy" levels of fat and reached a level of fat that could compromise health. This process is not linear, and owners may be partially aware of their horse's fat, while not recognising its extent. The better understanding of owner awareness of fat could be helpful to equine professionals who need to work with owners to find ways to increase that awareness and, subsequently, address excess weight in horses.

The study also highlights how overweight equines are constructed as the "norm" by owners, who find it difficult to conceptualise the body shape of their horses underneath its fat. Thus, finding practical ways to recalibrate that social norm, for example, by celebrating and promoting healthy body weight, may help to redress this balance.

Finally, owners found it difficult to find ways to "fight" obesity; weight management is often considered to negatively impact the immediate welfare of the horse, for example, by leaving the horse hungry, bored or isolated. Thus, flexible and creative equine management strategies which maximise the horse's welfare, such as herd living, non-grass turnout and track systems, will make equine weight management a more positive experience for horse owners and horses alike.

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CONFLICT OF INTERESTS

No competing interests have been declared.

AUTHOR CONTRIBUTIONS

T. Furtado undertook this research primarily as part of a PhD; her role included designing the study, recruiting and interviewing participants, analysing the data and writing this article, with support throughout. E Perkins provided extensive support with the data analysis, particularly with developing the themes and categories eventually used in this research, and writing this manuscript. G. Pinchbeck, C. McGowan and F. Watkins provided support with the design and operations of the study, gave feedback on the data analysis and closely worked with other authors to create this study. R. Christley oversaw the entire process, including assisting in creating the study design and its operation, overseeing the data analysis process and in completing this manuscript.

ETHICAL ANIMAL RESEARCH

The study was approved by the University of Liverpool Veterinary Ethics Committee (number 457); this committee also granted approval to analyse five transcripts with equine nutritionists which had been collected for a previous project on laminitis.

INFORMED CONSENT

All horse owners and professional participants gave informed consent.

DATA ACCESSIBILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

PEER REVIEW

The peer review history for this article is available at <https://publons.com/publon/10.1111/evj.13360>.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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