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Why isn't the transition period getting the attention it deserves? Farm advisors' opinions and experiences of managing dairy cow health in the transition period

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ABSTRACT

During the transition period three weeks before and after calving the dairy cow is at greater risk of developing disease, to the detriment of welfare and production. An understanding of the reasons why and how farmers and their advisors engage in efforts to control metabolic disease during the transition period is required if these diseases are to be more successfully controlled. The study reported here, based on interview research, investigates the opinions and behaviours of farm advisors on transition cow management and nutrition, their experiences of working with their respective farm clients, and interactions with other farm advisors to help manage transition cow health and productivity. Semi-structured interviews were conducted with 12 veterinary advisors and 12 non-veterinary advisors (nutritionists, feed company representatives and independent consultants) in England. A key theme emerging from this qualitative data was a perceived lack of focussed transition management advice provided by advisors. Reasons for suboptimal or lack of appropriate advice included: time pressures for advisors to visit as many farms as possible; avoiding the investigation of areas of potential improvement, for fear of not meeting transition health and performance targets; financial disincentives for nutritionists, as the sales commission attributed to transition cow feeding was small relative to the main milking herd; and a lack of confidence in the subject. Other aspects included the responsibility of providing transition advice which was perceived to be high-risk, a lack of cooperation between veterinarians and nutritionists, and the perceived varying competencies of nutritionists. The findings demonstrate the importance of the varied influences of 'people factors' on transition cow health such as the nature of the advisor-farmer relationship, advisor-farmer communication and herd-level advisor collaboration on transition cow health and management.

1. Introduction

During the transition from the dry period to lactation the dairy cow undergoes a period of physiological, metabolic, and immunological change and is at greater risk of developing disease, to the detriment of welfare and production (Drackley, 1999). These associated metabolic diseases include hypocalcaemia, ketosis, fatty liver syndrome, metritis, mastitis and retained foetal membranes (LeBlanc, 2010). The manner in which the transition cow is managed during this time is strongly associated with the incidence of metabolic diseases, milk yield and fertility in early lactation (Roche et al., 2018). During the last two decades extensive research has been conducted which has refined nutrient requirements and strategies for transition cows (Horst et al., 1997; Huzzey

et al., 2007; Van Saun and Sniffen, 2014). Yet, according to Mulligan and Doherty (2008) and Mills et al. (2020), dairy herds still experience high rates of metabolic diseases, with rates in well-managed herds remaining similar to those published decades ago, indicating a perennial problem for dairy cow welfare and farm profitability. This also suggests that there are barriers to implementing best practice, or advisors are failing to understand the local and situated contexts that influence farmer behaviour and responses to their advice (Bard et al., 2019).

In order to enact behavioural change, advisors must understand farmer-specific reasons why some recommendations may not be implemented successfully, and develop a tailored approach to farm issues, creating farmer-centred solutions that are co-constructed based on farmers' motivations. This requires advisors to be collaborative,

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engaged and sympathetic to their clients' needs (Bard et al., 2019). Furthermore, this approach must build on the tacit knowledge that is often used intuitively and subconsciously by farmers, thereby acknowledging local beliefs and practices and tailored towards the individual farm (Eastwood et al., 2012). In some cases, advisors can provide advice, yet farmer trust (or lack of) can impede behavioural change, and power relations, partiality and tensions can influence the degree of trust built with farmers (Sutherland et al., 2013). Additionally, advisors do not have automatic credibility and legitimacy - these have to be earned based on expertise and reputation (Cooper and Croyle, 1984; Vanclay, 2004), which further complicates the dynamic relationship between the farmer and the advisor. There is therefore a need to understand what influences farmers and the key actors who are engaged in managing metabolic diseases, and why recommendations are not always implemented on farms, if the incidence of metabolic and transition cow diseases is to be reduced, as discussed by Redfern et al. (2021).

Considering the nature of metabolic diseases suffered during the transition period, many of which are subclinical and result in 'hidden' losses, a lack of awareness of the scope of the problem is likely. It is possible that a lack of farmer or advisor awareness of a subclinical problem could contribute to a lack of discussion relating to transition management on farm. Proactive discussion of transition health issues and how to minimise the associated risks may be required to raise awareness of the potential losses that arise from subclinical transition issues. The importance of veterinarians as sophisticated and effective communicators in the advisor-farmer relationship, and their requirement to accommodate different farmer learning styles has been highlighted by Atkinson (2010).

Despite the importance of the relationship between farmers and veterinarians, farmers are exposed to multiple sources of nutritional advice to manage transition cow health, to which they attribute varying levels of influence and credibility (Atkinson, 2010). Advisors influence farmers to adopt behavioural changes and implement practical husbandry improvements at farm level, so it is likely that both farmer and advisor attitudes and their interactions influence transition cow management on farms. Although the veterinarian has largely been regarded as the most trusted advisor (Enticott et al., 2012), farmers may receive input from other non-veterinary agricultural advisors with different areas of expertise (Ellingsen et al., 2012) such as nutritionists, consultants, and feed representatives, all of whom are also likely to influence farmer behaviour. Additionally, as Reader (2012) explains, while farmers have dramatically increased their livestock numbers relative to labour units, they may be more likely to outsource labour for certain procedures to specialists, but may not be willing to pay for a veterinarian to carry out those services. As such, the rise of the role of farm veterinary technician has allowed farmers to do this, with technicians taking on more routine roles such as herd vaccinating and calf disbudding (Lowe, 2009). Recent qualitative research by Woodward et al. (2019) suggested that paraprofessionals and technicians will continue to play a significant role in cattle veterinary practice, as the role of the cattle veterinarian adapts to become more advisory and consultancy-based, potentially resulting in the veterinarian becoming one of multiple trusted advisors on farm. For example, Brujnis et al. (2013) reported that foot trimmers and feed advisors had more influence than veterinarians on farmer intentions to improve dairy cow foot health. Similarly, Hockenhill and Creighton (2013) found that horse owners regarded farriers to be equally important as veterinarians when seeking information on equine health topics. In a Canadian study investigating barriers to transition cow management, farmers attributed changes in the health of their transition cows to dietary problems, and often sought advice from both their veterinarian and nutritionist to solve this type of problem (Mills et al., 2020).

The way advisors cooperate with each other may also influence farmer behaviour, as conflicting knowledge and different advice from multiple advisors can place farmers in a state of cognitive dissonance (Kristensen and Jakobsen, 2011). Advisor behaviour, communication

and discussion is likely to influence farmer adoption of practices. There have been calls for farm nutritionists and veterinarians to work together more closely, suggesting a disconnect between the two professions (Smith and Hollis, 2007; Van der Leek, 2015). It is possible that the advisor's confidence in their own knowledge and experience in a particular topic or area of farm management could influence how often they bring up that topic for discussion with the farmer, as found in equine veterinarian practices (Parker et al., 2018). Similarly, Ritter et al. (2019) reported that veterinarian confidence and nervousness influenced farmer adoption of advice. Investigating the opinions and perspectives of a range of stakeholders with regards to the management of transition cows could therefore yield further useful insights.

Reviews on transition dairy cow management have highlighted the need for social science approaches to better understand the attitudes and drivers affecting the management of transition cows (Mulligan and Doherty, 2008; Redfern et al., 2021). As demonstrated previously, the use of qualitative research approaches has increasingly been employed and accepted within the field of veterinary epidemiology (Robinson, 2020). There has, however, been a lack of qualitative research to date on this research theme of transition cow management, despite the significance of the problem in commercial dairy herds globally. Although one interview-based study has been conducted in Canada investigating farmer and veterinarians' opinions and barriers to transition cow management (Mills et al., 2020), to the authors' knowledge there have been no similar qualitative studies conducted in Europe, nor any involving non-veterinarian advisors on this topic. Indeed, Mills et al. (2020), while not including non-veterinary advisors in their study, emphasised a need to investigate the perspectives of nutritionists, feed representatives and business consultants. The aim of the current study was to investigate the opinions and experiences of farm advisors involved with transition cow management in England using a semi-structured interview methodology. The objective was to better understand why the uptake of scientific recommendations for best practice may or may not be communicated to farmers.

2. Methods

The study involved in-depth semi-structured interviews carried out face-to-face and on the telephone with 12 veterinarians (6 dairy-specific and 6 mixed veterinary practitioners) and 12 non-veterinary advisors (3 independent nutritionists, 7 compound feed company representatives and 2 mineral supplement representatives) in the Midlands of England. These interviewees were a subset of a larger sample which included interviews with all-year-round and block calving dairy farmers which are not reported in this paper. Participants were recruited using non-random purposive sampling (Given, 2008), which provided access to a range of advisors with different roles and breadth of experience. Advisors known to the first author through the dairy farm community were initially contacted, and the farmers who participated in the wider study were herd owners, herd managers, or both. Farmers and advisors also acted as gatekeepers (Crowhurst and Kennedy-macfoy, 2013) to help with further participant recruitment through snowball sampling (Noy, 2008).

For logistical reasons, interviews with participants were initially conducted face-to-face in a geographical radius within a feasible daily travelling distance. Because of Covid-19 restrictions, 16 of the 24 farm advisor interviews were conducted by telephone. The interviews were conducted between January 2020 and September 2020. The semi-structured interviews followed separate topic guides - veterinary advisors and non-veterinary advisors. These guides were designed to use open-ended questions to ensure the interviews were free-flowing and flexible. This allowed the participants' responses to guide the direction of the conversation, whilst remaining relevant to the topic of transition cow management. All themes presented in the paper were explored inductively through relaxed conversation during the interview. Advisors were asked general and open questions about their main areas of

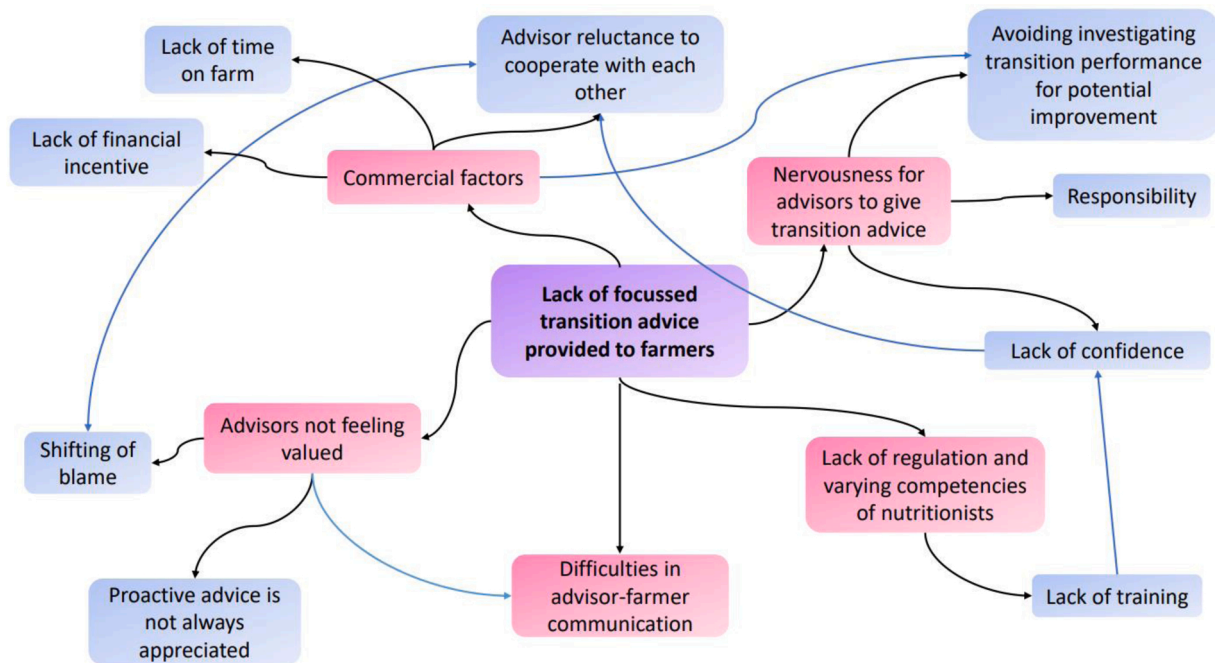


Fig. 1. Thematic map of perceived barriers by advisors for providing focussed transition cow management advice to farmers, presenting the key themes (pink), and the sub themes (blue) that emerged from the interviews, of which some interlink (blue arrows).

concern for transition cow health and management, and their role in providing advice and information, similar to the approach reported by [Palczynski et al. \(2020\)](#) for dairy calf management. All of the interviews were conducted by the first author and were piloted beforehand to ensure topic guides were suitable. Only minor changes were made to the topic guide, and as the pilot interview transcripts remained relevant, they were included in the dataset. Interviews were audio-recorded with consent, manually transcribed in full, and analysed thematically using *NVivo 12* software (QSR International Ltd, Australia). When the interviewer determined that data saturation had occurred and no new themes were being identified, data collection ceased ([Guest et al., 2006](#)). Transcripts were coded in *NVivo 12* and analysed into common themes which accurately reflected the opinions and experiences of the participants ([Guest et al., 2011](#)) through an iterative process of reading and re-reading the transcripts while comparing to previous quotes and themes generated through the interviews. In the first process of coding, interview quotes were arranged according to the topics, the advisor's role, main areas of concern and personal values. Coding was then repeated to further explore participant attitudes to transition management in more depth, and relevant interview excerpts were chosen to represent the attitudes and opinions of participants relevant to the themes that were constructed ([Miles et al., 2018](#)). The themes that arose from the interviews have been depicted in [Fig.1](#). The study adhered to the criteria for reporting qualitative research (COREQ) guidelines ([Booth et al., 2014](#)).

The findings in the current study are likely to be indicative of what advisors in other parts of England and in other countries believe and have experienced. The lead researcher purposely set out to recruit advisors from different companies, that were balanced in gender and were of differing ages, with various backgrounds, areas of speciality and levels of experience to minimise bias. While the authors recognise that the participants were geographically close, it was not possible to interview a large enough range and demographic of participants within a reasonable time period to be statistically relevant, and nor is the objective of qualitative research of this kind. Additional research could be conducted to acknowledge the attitudes and opinions of farm advisors nationwide and in other countries to build further on the findings in this regional study.

2.1. Ethical approval

Approval was obtained from the Harper Adams University Research Ethics Committee (0173-201901-PGMPhD). All participants were provided with the contact details of the researcher and an information sheet outlining the details of the project. Participants were made aware that what they said would be anonymised when their quotes were used in subsequent publications or presentations.

3. Results

All the participating farm advisors were employed by different companies and had different levels of experience. The advisors were grouped based on their years of experience in their respective roles, with 4 participants having less than 5 years of experience, 6 having between 5 and 10 years, 5 between 11–15 years, 4 between 16–20 years, and 5 having over 20 years of experience. The 12 veterinary and 12 non-veterinary participants were balanced equally in gender in their respective groups (6 male and 6 female participants in each group). There were no notable differences detected in terms of findings between the interviews conducted face-to-face and those conducted on the telephone. Interestingly, the topic of heifer nutrition was not mentioned as a particular issue in the interviews.

The main themes presented in this section demonstrate a perceived lack of focussed transition management advice provided by advisors, and these related to advisors' commercial interests, a nervousness for advisors to get involved with transition cow management, advisors not feeling valued, communication difficulties, and the perceived varying competencies of nutritionists.

3.1. Commercial factors

3.1.1. Advisors under time pressure

Transition cow management was perceived to be a confusing area of dairy cow management by all advisors which, according to nutritionists, required more time spent on farm and time spent in training. Advisors spoke of being under time pressure, particularly feed-sales representatives and nutritionists, who were under pressure to meet targets and visit

as many farms as possible:

‘When you’re selling feed, you’ve got to get around as many farms as possible. And meet targets. And sometimes, if you don’t meet those targets, you don’t keep your job. So, you can’t blame reps [feed company representatives] for not wanting to stand around chatting about transition when it’s complicated, and the commission is small.’ (A4, feed company representative).

‘I’ve operated independently for 22 years... I’m not answerable to anyone else other than the client. I don’t have a sales manager over me asking me why my sales are down this month. [Feed company representatives] are not there to stand around talking about transition cows; they’re expected to go on farms selling them a tonne of milk powder or get the dairy cake [concentrate] order.’ (A17, independent nutritionist).

3.1.2. Financial disincentives for nutritionists and feed company representatives

The financial rewards for feed company representatives to gain commission on dry cow feed is minimal in comparison to that gained when feeding the milking herd. For this reason, advisors speculated that feed company representatives were less eager to advise farmers on transition cow management in order to seek financial gain from the sale of a product:

‘From a commercial point of view... it is minimal tonnage really isn’t it? Most people will focus on the milking herd to get the tonnage. I think the consultants and the other people that aren’t paid per tonne probably look at dry cow management more, but I know full well that the guys I work with will go after the dairy [concentrate] long before going near the dry cows.’ (A20 - mineral supplement representative). ‘I think a lot of advisors on farm are nervous about tampering with the dry cow system and I think commercially as well, when we look at commercial businesses, they do tend to focus on the lactating dairy business because of the volume of food to consume, and miss out a lot on the dry cow element. So, I think there is a commercial element to it which I don’t like to say but we’ve got to be realistic and honest about it and I think that is the case. I’m not saying it’s right, but I think that it does occur.’ (A16 - feed company representative).

‘Transition is a really complicated topic, it’s a very short time where an awful lot happens, and so much has the potential to go wrong. And I can understand from a sales perspective it’s not really where the tonnes are is it, to be really frank about it?’ (A16 - mineral supplement representative).

3.1.3. Lack of advisor cooperation

Although farmers appreciated their veterinary and non-veterinary advisors co-operating to discuss transition cow health, all advisors claimed that advisor collaboration did not occur enough due to a lack of mutual respect, and a defensive attitude between veterinarians and nutritionists for commercial reasons:

‘There is a lot of animosity between vets and nutritionists. A massive, massive amount!’ (A3- independent nutritionist)

‘We end up fighting and blaming each other, and some will always blame the feed supplier... they say you’re not feeding enough energy, that’s a favourite, or the [parlour concentrates are] rubbish. No, it’s not, it’s usually the management is wrong!... Some vets would immediately fight you off or undermine you... we should be trying pull the rope the same way, that’s the big cliché. We’re in a tug of war on the farm, and my role is to pull it the same way [the farmer] is pulling it.’ (A1- feed company representative).

Defensive behaviour was perceived by veterinarians to be more common with feed company representatives rather than independent nutritionists. This could be because independent nutritionists may be

more qualified or experienced, and therefore more comfortable in holding a conversation with a veterinarian, as mentioned in the following excerpt:

‘The more sort of technical nutritionists that I’ve worked with I don’t get that [defensive] vibe from if I’m going to be opinionated. I get the defensive attitudes more from the salesmen type of people, than the nutritionists. Like the guy who is making sure the orders are coming in and the protein levels are being tweaked when they turn out, that level of nutrition work. Not necessarily the independent guys and girls who have done degrees in agriculture and nutrition and PhDs and what not, you know, that level don’t seem to feel threatened.’ (A10- dairy specialist veterinarian).

It was suggested that the lack of collaboration between veterinarians and nutritionists was partly due to a lack of veterinarians training in nutrition, and therefore a lack of understanding the role:

‘The vet and nutritionist should be working together symbiotically, because how is the nutritionist going to know there is a problem, or vice versa if there is no communication? There are plenty of farms where I have never met the nutritionist and I’ve been doing the routine there every week. And that’s just how some of them function, it’s a very different approach. I think that’s one area that’s important, having a joined-up approach. And vets having a bit more training in it as well, because I definitely feel that I lack some vital knowledge about having a discussion in depth about a nutrition problem.’ (A11- mixed practice veterinarian).

‘Some of my younger colleagues who are maybe a bit less confident don’t feel ready to ring up the nutritionist because they would feel intimidated about having that conversation. And they wouldn’t be so ready to challenge a nutritionist in a constructive way, they would just agree with what they said. They probably wouldn’t suggest trying something new, so it works both ways, the nutritionists who are less technically able are less likely to ring up the vet and have a chat.’ (A14- dairy specialist veterinarian).

3.2. Nervousness for advisors to give advice on transition cow management

3.2.1. Carrying responsibility

Providing transition advice was perceived to be high-risk, with a fear of receiving blame if the advice provided did not result in a positive outcome. This was perceived to be more of a problem for nutritionists and feed company representatives than veterinarians, as highlighted by the following quotes:

‘I thought I was under pressure as a vet, but in a way, it is much more pressure as a nutritionist I think.’ (A5 - feed company representative who previously practiced as a veterinarian)

‘The minute you take on some responsibility for dry cow feeding your head is on the block, isn’t it? Sometimes it’s safer to just not enter that arena. The more prescriptive you get, the more responsibility you carry. And the more the problem lands with you if it doesn’t work.’ (A1 - feed company representative).

‘When things are going well, nutritionists get no credit, then if things go badly everyone is pointing fingers at you, so I can see it’s a terribly difficult job and... you don’t want to bring up a problem do you?... Whereas with vets, it’s a bit easier because it doesn’t necessarily reflect directly on us.’ (A14 - dairy specialist veterinarian)

‘This is where the commercial side comes in, if the nutritionist is on a farm and he thinks the farmer is not listening, he should really tell the farmer and go. Because if they aren’t listening and they get inspected by a vet, who’s going to get the finger pointed at them? So, it is a difficult one. There are commercial pressures on a lot of people.’ (A3 - independent nutritionist)

This nervousness about getting more deeply involved in transition cow nutrition was due to the perceived high risk of farmers suffering losses to metabolic diseases:

'I think quite a few people know how to ration a dairy cow, but dry cows can really freak people out. I think if you get dry cows wrong you can have quite big impact on subsequent lactations, fertility, and all sorts of things. I think people shy away from it.' (A20 - mineral supplement representative).

3.2.2. Lack of self-confidence

Veterinarians spoke of experiencing a lack of self-confidence and assertiveness when advising dairy farmers on transition cow management, particularly when they were younger and less experienced in practice. Eleven out of the 12 nutritionists in this study spoke of having a lack of confidence in this area, however this was due to conflicting management strategies, and the issue that one nutritional strategy could work on one farm but not another as there were often other external and confounding farm factors affecting transition success.

'I do think there is a lot of conflicting advice from a nutrition point of view definitely. There are no hard and fast rules at the moment, because there's not a huge amount of evidence... so many people have different systems and different things suit different systems. Farmer A could do something that if Farmer B tried could be a complete disaster, even though Farmer A had no problems. I'm a big advocate for controlled energy and I very much stay away from steaming up [feeding higher levels of concentrates during late pregnancy to increase body energy reserves] wherever I can, it might get the milk post-calving, but then you've got an increase in negative energy balance and a longer return to positive energy balance. But a lot of nutritionists like to steam up dry cows, and the methods are totally conflicting.' (A20 - mineral supplement representative).

'It takes a lot of trust, its nerve-wracking. I still get that funny feeling when you make a big ration change, and they say they will try it and you think "Oh [swears]!" And you know in your own head on paper it will work, but this is the problem with everything on farm, there are so many components with management and health.' (A19 - mineral supplement representative).

A lack of self-confidence to bring up transition cow management in conversation with their farming clients was mentioned by one feed company representative to be due to a lack of technical training, and training in the products that they were selling:

[Speaking of working previously at a firm specialising in transition management] 'I didn't feel like I had enough training in the [transition] feeds they were selling. I didn't feel confident advising farmers which dry cow feed to go on that much because I didn't know them well enough.' (A15 - feed company representative)

While there was lack of individual self-confidence and assertiveness reported by advisors, this also linked to a lack of confidence in published scientific findings, which did not always result in a successful outcome. This lack of confidence was further exacerbated by the high number of environmental and management factors influencing the effectiveness of transition management strategies, which were beyond the advisors' control:

'There's a confidence issue too because it is a very complicated matter, it is complex. A simple dairy cow ration is straightforward but with transition every dairy farmer has different limitations, environment, stocking density, climate, cow history - they've all got huge parts to play. You can have a transition programme on one farm that works like a dream; you could replicate it on another but it won't work because there are other variables in the background that are just screwing it up. So, I do think it's a confidence issue.' (A18 - feed company representative).

'The metabolic issues are coming from not managing them properly, whether its heat and space, or overstocking and high cell counts. They [farmers] build these massive new sheds for their milkers and increase their milking cow numbers and not realise that in 9 months' time there will be an extra 20 cows calving down into a shed that is the same size!' (A15 - feed company representative).

Despite advisors understanding the external factors that influence transition success, both veterinarians and nutritionists reported feeling blamed for when it went wrong, despite their best efforts, even when the fault was due to the farmer not implementing the management strategy properly, or the farmer made changes to the ration without notifying their advisors. This exacerbated the lack of confidence advisors were experiencing, because even when farmers did not follow instructions, the advisors felt they would be held accountable for an unsuccessful transition:

'I feel like farmers are setting me up for a failure sometimes. They have a problem; they ask my advice, but they just don't do it. Or they do it totally differently, or feed something else. Then they get frustrated with me, which is exhausting. But actually, they're frustrated at a problem they have created. I just feel like saying: "Don't blame me for this, you didn't follow my instructions!"' (A3 - independent nutritionist).

3.2.3. Avoiding investigation of transition management and performance

Advisors were reluctant to ask questions or advise on the current performance of transition cows, fearing that it would highlight the need to make changes or recommendations, which may not result in a positive outcome for their business:

'Why would you risk your commercial involvement with the farm for trying to take on one last bit of area of management that isn't going to work? You know he's going to have cows that calve within a week of being dried off, you know he's going to have cows that never calve, so he could see what you have done as perhaps...failing. That's why you would keep away from being proactive, and just getting involved where there is a problem, but otherwise just keeping away.' (A1 - feed company representative)

'If you're supplying product in there, you're not inclined to go looking for trouble. If the farmer hasn't mentioned it, they're not going to go and open a can of worms by saying actually something could be better, when they are feeding their fancy dry cow roll [concentrate feed] ... with a customer I think human nature means that nutritionists don't want to ask certain things.' (A17 - independent nutritionist).

3.3. Advisors not feeling valued

Both veterinarians and nutritionists were discouraged from giving proactive transition advice to farmers when they did not feel valued or listened to by their farming clients. In particular, feed advisor representatives felt disinclined to provide advice to farmers when they thought there was a possibility of losing that customer to another firm, based on price per tonne of feed. Feed company representatives perceived that the farmer did not value feed representatives who provided advice alongside selling a product, therefore the farmer was considered undeserving of that advice. This was often backed up by an anecdote with a negative experience of losing a farm client, despite the nutritional input and advice from the sales representative:

'You can lose a customer to £3 per tonne, so you think: "Why should I break my neck investing a lot of time and giving them a lot of free transition advice when they go and leave you?" If you don't feel valued, you don't want to stick your neck out for them all the time.' (A4 - feed company representative).

'I think farmers give people a try and when they feel like they've learnt something from them, they shift. They're not very loyal sometimes.' (A13, mixed practice veterinarian).

'So, I gave the farmer a free bit of advice based on sensible observation of his cubicles, that worked. That will have earned him lots of money for the rest of his farming career. And a delivery goes wrong [snaps fingers], and like that I am sacked. And that's another reason why sometimes you can understand the cynical salesperson who just sells.' (A1 - feed company representative).

Veterinarians, however, felt discouraged to give proactive transition advice for different reasons. Rather than commercial competition affecting this, veterinarians felt frustrated when they were unable to make a positive difference on their clients' farms because some farmers did not adopt the advice provided, even after a longstanding relationship between the farmer and veterinarian:

'I can think of a farmer I went to on Tuesday, 1000 cows and I've worked with him for 12 years, and I can't think of ANYTHING I have managed to change there, from a transition cow perspective, that's stuck. We have done specific transition visits, loads of reports, data analysis. So that's quite depressing. You think: "Why do I bother?"' (A2 - dairy specialist veterinarian).

'When I was younger I would be going in investigating all these problems and saying "Let's do a transition review, and let's sort all this and let's measure your water trough" and all the rest of it, and now with those farms I am just aware that it's literally like banging your head against a wall! Because you put all that effort in, they don't do anything that you've suggested and three months later they say to you, "Do you know why we might be getting a few milk fevers?" And you literally stare at them with your jaw on the floor and that's so frustrating because you just feel like everyone's laughing at you, because you go above and beyond putting a lot of effort in and it's just thrown back in your face. And you've not charged for it appropriately either.' (A11 - dairy specialist veterinarian).

Advisors also perceived farmers to value transition cow 'fire-brigade' services more than preventative services, because they were seen to be solving a problem. It was thought that farmers could not always attribute transition success to the advisor's proactive planning as this was more difficult to see. This was made more complicated by the farmers being busy and not wanting to, or being unable to make the time to discuss transition issues:

'If you do a bad job and end up fire brigading all the time, they often think more of you because you've had a problem and you've been in and sorted it.' (A3 - independent nutritionist).

3.4. Difficulties in communication

Farm advisors expressed frustrations with the difficulties in getting farmers to adopt advice, and advisors perceived nutritionists to have better communication skills than veterinarians, and an ability to 'get the message across' to farmers. This was found to be frustrating by some veterinarians:

'It's quite frustrating sometimes, because the farmers do often take what the nutritionist says more than what the vet says.' (A11 - farm veterinarian).

'Sometimes I think vets are so knowledgeable that they almost bore farmers, whereas the likes of you and me are on their level a bit more. We can speak to [farmers] as they speak to each other.' (A18 - feed company representative).

Interestingly, the view that an advisor's sales motive negatively affected the farmer's trust was not limited to feed company representatives, as veterinarians were also seen to have a sales motive, and this

was also perceived to be a communication barrier between veterinarians and their farming clients:

'I kind of get the feeling that a nutritionist who is good at talking to people actually gets through to farmers a lot better than the vet does. I've had a couple of farmers who absolutely rave about the service they have from [feed firm], and they say that they come in and do this whole holistic approach, it's amazing, we've had less [left displaced abomasum] and better yields, and I think they're only doing the things that we have been telling them to do for years as vets! But they haven't listened because they just see us trying to sell them stuff.' (A12 - mixed practice veterinarian).

Communication skills were highlighted by advisors as important factors in getting farmers 'on their side', ultimately in order to either adopt their advice or to buy the product or service the advisor was selling, or both. Communication skills were also perceived by advisors to be influential in whether veterinarians (and other advisors) were considered good or bad:

'It's all to do with communication, and some of the best vets can be considered not good vets by farmers, because they haven't got the right 'chat'. And similarly, unfortunately some vets that aren't really very good as vets can be considered really good vets by the farmer because they can read the farmers and say the right things at the right time.' (A21 - dairy specialist veterinarian).

3.5. Regulation and competency of nutritionists

Advisors expressed their concern for the perceived lack of regulation of nutritionists in England, and how this impacted the health and nutrition of transition cows, due to the varying abilities and competencies of nutritionists and feed company representatives. The Feed Advisor Register (FAR) was established by Agricultural Industries Confederation (AIC) for farm nutritionists (www.agindustries.org.uk/feed-adviser-register.html) in response to demands to reduce emissions from farmed livestock. Nutritionists explained how becoming FAR-registered involves participating in online training modules and a multiple-choice assessment. The nutritionists' opinions of the FAR in the current study were mostly negative, suggesting that the examining questions were not challenging enough, as highlighted in the following excerpts:

'When does a feed rep turn into a nutritionist? When does a nutritionist just become a feed rep? The word 'nutritionist' is a dangerous word! Does it exist? Is there a qualification for it?' (A1 - feed company representative).

'I think [FAR] lacks substance, to be brutally honest. I think it was done as an industry initiative to really think about how to combat greenhouse gases, that's ultimately why it was there to try and link environmental stuff with nutrition which is important obviously, but it lacks teeth. The training and the assessments are in reality so easy... The FAR, it's not enough. The average farmer doesn't even know it exists.' (A17 - independent nutritionist).

'You couldn't call it [FAR] a force for good yet, but it's a step in the right direction.' (A5 - feed company representative)

The majority of veterinarians and independent nutritionists felt that more was needed to regulate nutritionists due to the potential financial loss a farmer could incur if the wrong nutritional advice were provided:

'I think it should be regulated, wholeheartedly. The attitude that someone is 'just' a nutritionist is silly. The nutrition on a dairy farm is absolutely a lynch pin of pretty much everything. So, they are in a spectacularly responsible and powerful position. And I think if you've got people out there who are not up to scratch and up to speed, they can cause an immense amount of damage and financial

loss, particularly with transition cows.’ (A12 - mixed practice veterinarian).

‘Well, there are definitely different levels of competency when it comes to nutritionist. Yes, I think it should be regulated - people need to be safe and do no harm. If you’re selling feed minerals that are essential, and you’re not calculating how much magnesium the transition cows are getting and they all die, who gets sued?’ (A13 - mixed practice veterinarian).

Nutritional competency and qualifications were deemed particularly important when considering nutritional strategies relating to the dietary cation and anion balance (DCAB) of pre-calver diets. Diets with DCAB strategies were perceived to be complicated and high risk to successfully implement, and this risk was exacerbated by the lack of regulation and formal qualifications required to be a practicing nutritionist:

‘Nutritionists just aren’t touching [DCAB]. We can’t even get people to do the DCAB diet properly. They don’t want to know, they aren’t trained in it, they don’t understand it, they don’t want to talk about DCAB with their farmers.’ (A3 - independent nutritionist).

‘There’s a lot of conflict about DCAB now, for example. Not many people understand it, number one. Number two, it’s not easy to achieve.’ (A5 - feed company representative)

‘I get nervous of a DCAB ration. You’d be surprised, there are many people doing DCAB and a lot of unqualified people who aren’t doing it properly, or looking at urinary pH.’ (A7 - feed company representative).

4. Discussion

It is important to understand the context within which farmers and their advisors operate (Palczyński et al., 2020; Robinson, 2020). The themes explored in this study, many of which are interconnected, demonstrate a relatively small but diverse group of feed and veterinary advisors whose individual experiences, perspectives and contexts impact their advice on transition dairy cows, their farmer-advisor relationships, and the advisor’s willingness to provide focussed transition advice.

A lack of time during farm visits was a major factor that impacted the amount of focussed transition management advice provided by feed company representatives. This was due to commercial pressures to visit as many farms as possible, in order to increase their chances of selling more products and feed and meeting sales targets. As transition cow management was perceived to be a complicated area with multiple farm-specific limitations, it was also considered to be an area of farm management that required considerable time and discussion. Time pressure has similarly been shown to influence veterinary behaviour in companion animal care, with veterinary surgeons feeling that they had to rush and keep discussions minimal to ensure that consultations were within their allocated time (Belshaw et al., 2018), and in farm animal practice where veterinarians felt that time constraints impacted their ability to collect and analyse herd fertility data (Mee, 2007).

The current study highlighted that most nutritionists and feed company representatives are paid a commission when they sell a compound feed or related product. For this reason, nutritionists and feed representatives who were paid per tonne prioritised the feed sold to the main milking herd. The commission gained from advising farmers and selling a dry cow or transition product was perceived to be far less of a financial incentive. To the authors’ knowledge, there is a lack of research that has been conducted to specifically investigate the commercial incentives influencing veterinary and non-veterinary farm advisor behaviour. However, Mee (2007) suggested that veterinarians may not be ‘hungry enough’ to provide fertility management services when there is less of a financial incentive, and because the opportunity cost of their time is high, they see less of a competitive return on investment when upskilling and providing additional services. In a similar vein, Charlton and

Robinson (2019) suggested a lack of financial incentive for veterinarians to provide advice on anthelmintic use when the products were often being purchased elsewhere by their farm clients.

Within human health care the patient’s outcome depends not only on medical skill, but also on ‘people factors’, such as communication between other roles, teamwork, and collaborative care (Firth-Cozens, 2001). Similarly, in companion animal practice, both veterinarian surgeons and veterinarian nurses are required for optimal patient care (Kinnison et al., 2014). Considering the significance of the role of nutrition in dairy cow health, and the importance of the veterinarian for emergency procedures and routine preventative care, one can speculate that when the veterinarian and nutritionist work together to combine skills and experiences and maintain an open communication, they can have positive impacts on dairy cow health and farmer satisfaction. Despite this potential, both veterinary and non-veterinary advisors expressed difficulties in collaborating with each other from different areas of professional practice. This was mostly attributed to a lack of mutual respect which influenced the advice offered on farm due to the ‘animosity’ between advisors and a shifting of blame, which resulted from the lack of farm advisors working collectively to solve farm challenges. Similar findings were reported by Ruston et al. (2016), who outlined that veterinarians felt threatened by non-veterinary advisors also offering preventative herd health measures. May et al. (2017) suggested that veterinarians and nutritionists can work together when blame is removed. Challenges in developing inter-professional practice can be seen in parallel in other areas of veterinary medicine including small animal practice (Kinnison et al., 2014), working with farriers (Moyer et al., 2012), and with equine physiotherapists (Bergenstrahl and Nielsen, 2016). These difficulties centre on power, status, the appreciation of professional roles, and lack of (or poor) communication (Kinnison et al., 2014). Conflicts between professionals often stem from misconceptions about each profession’s role (Englar et al., 2018). The advisors in the current study reported that there is no regulation of the use of the description ‘nutritionist’, so ‘nutritionists’ can hold no qualifications and have limited professional experience. This lack of regulation could contribute to the lack of mutual respect and appreciation of professional roles between veterinarians and nutritionists, and between other nutritionists themselves. Advisors did speak of the importance of culturing relationships for the farmer’s benefit, but they understood it could be difficult, particularly when advisors feel less confident, experienced, or less knowledgeable on a topic. The conflicting theories and strategies relating to transition cow management is unlikely to help this, particularly when different advisors suggest different practices. One method to combat this reluctance to cooperate in veterinary practice is inter-professional education, an approach used to encourage veterinary practitioners to learn with, from and about each other to improve collaboration and quality of care (Kinnison et al., 2014). Englar et al. (2018) conducted inter-professional education courses for human healthcare and veterinary students and found that their unfamiliarity with other related professions hindered their ability to collaborate. Further research is required to address the gaps in knowledge and mutual respect for farm-advisory roles by correcting common misconceptions and recognising the contributions made by all professional stakeholders on farms.

Advisors reported that when the dialogue on farm moved specifically towards transition cow management, they were more likely to avoid providing focussed transition advice due to a lack of confidence. This lack of confidence was due to the perceived high risk of the outcome being unfavourable - a risk partly attributed to farmers not properly implementing the management strategy, or external factors beyond the control of the advisor. Often, when problems are not solved, despite following the advice perfectly, the farmer will blame the failure on the quality of the advice (Derks et al., 2012). Both veterinarians and nutritionists reported feeling blamed for a lack of transition success, even when the fault was due to the farmer, which could further increase the ‘high risk’ perception of advising in this area of dairy cow health. Mills

et al. (2020) investigated farmer perception and barriers to transition cow management and presented similar findings, suggesting that farmers felt that their nutritionists were largely responsible for the success or failure of their transition cows, and that they would be “held accountable” for the outcome. The lack of confidence from advisors was partially attributed to the complexities of managing transition cows with farm-specific limitations, and the conflicting strategies that are published in the scientific literature. For example, some dietary strategies have been put forward which include feeding higher amounts of concentrates pre-calving in the close-to-calving groups (Gerloff, 2000), also known as the “steam-up strategy” (Grummer and Rastani, 2004), to better prime the rumen for the post-calving diet and reduce body fat mobilisation (Friggens et al., 2004). Cardoso et al. (2020) suggested a controlled energy diet, high in low-energy density fibre which reduces the level of insulin resistance post calving. Feeding controlled energy diets resulted in positive health impacts, such as lowered plasma non-esterified fatty acids, and a reduction in liver triglyceride concentration, but also a reduction in milk yield and milk fat when compared to high-energy dry cow diets (Silva-del-Rio et al., 2010; Janovick et al., 2011). Mills et al. (2020) also illustrated disagreement on the application of scientific research, with some farm advisors finding scientific research difficult to apply at farm level due to conflicting results from different studies. Nutritionists and feed representatives stated that they cannot afford to risk untested practices in such a competitive industry. The risk of losing credibility with farmers also governs the actions of other farm advisors, as seen with research involving agronomists (Ingram, 2008).

As there is generally less focus on transition cow management due to commercial factors and financial incentives, advisors may not prioritise learning more, or refreshing, their knowledge relating to this area of dairy cow management, and this may contribute to lower confidence levels. Roberts and Murray (2013) investigated perceptions of equine veterinarians and established that they were less confident advising on areas that they had received less professional training on and were less confident when their role covered multiple species rather than being equine-specific. Heath (2004) reported that mixed practice veterinarians who had limited equine clientele were concerned about staying current on equine-related information, reducing their confidence in providing equine health advice. Lower advisor confidence levels in the current study may be due to relatively little education and training on transition management during professional training, or perhaps these participants had encountered fewer transition-related cases in their practices. Similarly, advisors covering other species in general practice (mixed practice veterinarians, or nutritionists that cover beef and sheep nutrition) may be less confident and knowledgeable providing transition information compared to dairy-specific advisors, as demonstrated by Roberts and Murray (2013) for equine nutrition advice. Additionally, because nutritionists are not officially regulated, some nutritionists and feed representatives may have had no formal training. Veterinarians have been shown to be more confident in dealing with topics where their clients are more knowledgeable, as observed in equine practice (Parker et al., 2018).

Regarding setting targets and goals tailored to the farm, advisors in the current study spoke of actively avoiding asking questions about transition cow health on farm to avoid the need to make new recommendations, particularly if the farmer was using a transition feed or product supplied by that advisor. Previous literature shows a reluctance for veterinarians to establish farmer goals because they felt they could be judged unfavourably if those goals were not met (Derks et al., 2013). The evaluation of veterinary communication skills during herd health visits showed that often no goals are set or evaluated (Jansen et al., 2010). Factors associated with transition cow health include nutrition, body condition and stocking density (Atkinson, 2016), and Mills et al. (2020) explained that when farmers perceived an inability to change these factors they may prioritise other farm goals that may not be deemed as important by their advisors. Derks et al. (2013) also

established that veterinarians did not actively seek to identify farmer goals or problems, and that this should actively be sought by veterinarians as most farmers do not readily volunteer this information. Similarly, Bard et al. (2017) reported that veterinarians assumed the drivers behind farmer motivation, and it was not explicitly asked of them. The current study highlighted a disconnect between advisors and their farming clients, and that advisors are not actively seeking and discussing the true priorities of their farming clients relating to transition management. It appears that there is a requirement for advisors to establish the main priorities of their farming clients, and for more effective training on transition cow management for advisors who do not feel confident enough to try to meet the determined goals.

In cases where nutritionists and feed company representatives were paid commission on the tonnes of concentrate they had sold, some did not feel their advice was valued, and farmers were considered underserving of focussed transition advice based on the lack of farmer loyalty to their nutritionists and feed representatives. This contrasts with the farmer-veterinarian relationship, where Ruston et al. (2016) stated that although trust must be earned, farmers tend to be very loyal to their veterinarians. Farmer loyalty appears to be influenced by the trust in their advisor, and advisors in the current study perceived farmers to be reluctant to trust feed company representatives due to their primary sales motive. Farmer loyalty and respect has been shown to influence the farmer-advisor relationship in the field of agronomy, with farmers shifting their loyalty to “more switched on” agronomists if they lost confidence in their current advisors (Ingram, 2008). Veterinarians in the current study were frustrated when they were unable to instigate a behaviour change, or when farmers would not adopt their advice, particularly when they had a long-standing relationship with their client. Behavioural changes are often difficult to initiate and sustain, and reasons for this differ from person to person (Speksnijder and Wagenaar, 2018). While behavioural changes are often facilitated by trusted advisors such as the veterinarian (Rose et al., 2018), the intention to change and the transition into action is usually governed by the intrinsic motivation of the farmer (Bopp et al., 2019; Redfern et al., 2021).

The advisors in the current study had complex relationships with their farming clients, and perceived that farmers thought highly of independent nutritional advisors, and negatively of feed company representatives. Mills et al. (2020) reported that Canadian nutritionists had “limited” relationships with dairy farmers, but it is unknown if these nutritionists were independent, or if they were feed company representatives. Interestingly, while the nutritionists stated that farmers held them accountable for their transition cow success or failure, advisors spoke of proactive veterinary advice not always being valued highly. Richens et al. (2015) established that the identification of the veterinarian as a ‘fire-fighter’ was linked to a sense of pride that some farmers rarely had to call their veterinarian, and how often the farmer called their veterinarian was used as a gauge of their herd’s health. However, in a study examining veterinarians’ opinions and drivers to proactive flock health, Bellet et al. (2015) reported that veterinarians perceived a problem with delivering predominantly reactive services only when problems occurred. While veterinarians are aware of their requirement to be proactive, they often struggle to maintain this in daily practice (Mee, 2007). The extent of this was highlighted by Ruston et al. (2016), where veterinarians reported difficulties in influencing farmer behaviour change, and despite coming under pressure to shift their role to a more preventative herd health advisor, veterinarians were not promoting disease prevention services effectively to farmers. A reason for this could be because some veterinarians perceive that farmers do not value their preventative services, and therefore they only offer what they think the farming client wants (e.g. a “fire-brigade” approach) in order to avoid upsetting the farmer-veterinarian relationship. Veterinarians in the current study reported difficulties in taking a proactive approach to transition cow management, particularly when the veterinarians perceived certain problems or issues to be more important than those perceived by their farmer clients. It is possible that due to the hidden

nature of subclinical metabolic diseases, farmer perception of metabolic problems is minimal, compared to veterinarians' perceptions. For example, farmer perception of bovine health issues has been investigated by Leach et al. (2010) and Tunstall et al. (2019) who established that farmers underestimated lameness in their herds. The current study demonstrates potential differences in how veterinarians and farmers prioritise herd health issues, with veterinarians expressing their frustration trying to get their farming clients to implement new practices, adopt their advice, and focus on areas of farm management that they deemed to be more important than their clients.

Veterinarians in the current study were keen to engage and educate their farming clients on managing their transition cows more effectively, similar to the findings of Robinson (2020) when investigating farmer and veterinarian opinions on managing Johne's disease in dairy cattle. However, in the current study veterinarians reported challenges in evoking change and persuading farmers to take on new or improved practices that would improve the health and welfare of transition cows, despite having a long-term trusting relationship with the farming client. Veterinarians highlighted communication as their main limiting factor towards getting farmers to adopt advice, which corresponds with findings from Jansen et al. (2010) who outlined that veterinarians are poor at active listening. Farmer education can also influence advisor behaviour. Ritter et al. (2019) established that veterinary communication altered with farmers that had post-secondary qualifications, and veterinarians became more nervous and used more counselling methods when communicating with those clients. Jansen and Lam (2012) suggested that veterinarians appear to persist in their remedial-centred and reactive expert role that occurs in veterinarian-farmer dialogue. Instead of being mere technical experts, veterinarians could take on the role of coach and facilitator, to empower farmers to make their own decisions, as also discussed by Bard et al. (2019). Interestingly, Hall and Wapenaar (2012) found that veterinarians favoured the approach of being a 'friend of the farmer' whereas the farming participants preferred a 'proactive person that could give good technical advice'. Farmer adoption of advice was examined in depth by Ritter et al. (2019) who determined that farmer preparedness to adopt veterinary advice was negatively associated with the dominance of the veterinarian during the farm visit, and positively associated with farmer satisfaction.

The regulation of animal feed advisors was raised as a topic of concern by the interviewees. Aside from the Feed Advisor Register (FAR), there are other voluntary registers for nutritionists to join, and specific ruminant nutritionist diplomas and postgraduate courses available, but this is not controlled by legislation. The Association for Nutrition governs the UK Voluntary Register of Nutritionists (UKVRN) to distinguish qualified human and animal nutrition professionals who meet rigorously-applied training, competence and professional practice criteria (Cade et al., 2012). Parallel discussions and concerns have been raised in other areas of animal and veterinary regulation and professionalisation (e.g. British Veterinary Association Congress, 2008; Loeb, 2019). Reader (2012) discussed the importance of regulating paraprofessionals in large animal practice as part of the veterinary-led team, in particular veterinary technicians who often practice as foot trimmers, but this could also potentially involve fertility technicians, milking parlour technicians or parlour hygiene specialists. As Lowe (2009) explained, some non-veterinary advisors may have a better working relationship or impact on changing farmer behaviour than the veterinarian, which was also expressed by advisors in the current study. Dairy nutritionists may not be viewed as paraprofessionals but may rather see themselves as professionals in their own right, but their influence is repeatedly overlooked in dairy research, which is surprising given the impact that nutritionists have on farmer behaviour and dairy cow health.

It is important to note the potential influence of the positionality of the first author who conducted the interviews and primary data analysis. She had a background in dairy cow health and nutrition and knowledge of the dairy industry. In the current study, the main researcher was likely

viewed as an 'insider' (Greene, 2014), and the researcher's positionality could be viewed as an advantage, by having situated and context-specific knowledge of dairy farming and transition cow health and welfare issues. This led to the researcher often being trusted and being viewed as having a deeper understanding of what it is like to be a farmer and a farm advisor.

5. Conclusions

The current study found that there are specific barriers to providing focussed transition advice to farmers, such as commercial competition, challenges in communication and collaboration, the complexity of the subject, and a nervousness for advisors to get involved in discussing transition cow management. Additional research is required to address the perceived lack of time and financial rewards for feed company representatives, in order to incentivise these advisors to provide more focussed advice on this area of dairy cow health and management, as these were major factors influencing how likely they were to provide focussed transition management advice. Additional focussed training around transition cow management for all types of nutritionists is required to address the confidence issue when making recommendations and investigating areas for potential improvement. Approaches such as inter-professional education both at under- and postgraduate levels may be beneficial for veterinarians and nutritionists to appreciate their differing but overlapping roles, and to improve the communication and collaboration between the advisors which is required. The opinions of non-veterinary advisors such as feed company representatives and nutritionists rarely feature in dairy cow health and welfare scientific literature. Including both veterinarians and nutritionists in this social science study has provided a wealth of alternative perspectives pertaining to the confusion and frustration that many farmers may feel towards transition cow health, management and the (lack of) advice provided by their advisors (Redfern et al., 2021).

Declaration of Competing Interest

None of the authors (E. A. Redfern, L. A. Sinclair and P. A. Robinson) have a financial or personal relationship with other people or organisations that could inappropriately influence or bias the paper entitled.

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