

Influencing farmer-vet relationship and improving sheep health and welfare: Impact of Flock Health Clubs

1. Abstract

Sheep farming is an important part of UK agriculture with significantly more breeding females than either the pig or cattle sectors. Whether grazing alongside arable rotations or utilising the marginal uplands, sheep farms arguably play a key role that is embedded within UK rural society. However, research led by University of Nottingham has identified various challenges and barriers that have affected relationships between UK sheep farmers and the veterinary profession. In response to these findings, Flock Health Clubs were developed as an initiative that aimed for improved and cost-effective sheep farmer-veterinary interaction. We report quantitative and qualitative data that assess the impact of Flock Health Clubs and indeed show tangible improvements in both farmer-vet relationships and measures of flock health and welfare.

2. Introduction

Changes in the farming industry including an overall increase in farm size, consumer demand for high health status of products and lower profit margins have impacted sheep farming and caused the need for changes in flock management (Lowe, 2009). The Department for Environment, Food & Rural Affairs (DEFRA) of the UK government issued a report stating the importance of farm animal veterinary surgeons providing preventative advice about disease rather than focusing solely on treating individual animals (Lowe, 2009). Disease prevention can be aided by monitoring the nutrition, husbandry and genetic selection of farm animals, as well as health, but it requires the establishment of a relationship between vets and farmers. While this approach has been widely taken up in the dairy cattle and pig sectors, studies indicated there was limited evidence of regular preventative advice being given to sheep farmers by vets and instead the majority of sheep farmers still considered the vet only as an emergency contact (Kaler and Green, 2013).

Research conducted at the University of Nottingham investigated farmer and vets' views around preventative advice on sheep farms (Kaler and Green, 2013; Bellet et al., 2015; Ruston et al., 2016). According to this research, farmers and vets both agreed that the preventative advice on farms is provided on an ad-hoc basis. Sheep farmers considered inconsistent service, high turnover and lack of sheep farming expertise among vets as their key barriers to forming good relationships. Farmers considered themselves as experts and were unable to see where vets could add value. Vets felt that they were not promoting the preventative ethos enough and they lacked marketing skills but also felt that farmers didn't need or value their services. Vets reported being unable to lever sufficient organisational or business skills to support the provision of an acceptable advisory service and felt the pressure of competition from outside the profession. These studies highlighted the need for more proactive and regular contact between sheep farmers and vets, identified key barriers to delivering preventative advice on flock health on farms and suggested that vets not only needed to improve expertise on the sheep related topics and develop confidence in delivering them, but also needed to find business models to offer these services to farmers and effectively market these services in order to improve the productivity and health of the national flock (Kaler and Green, 2013).

As a direct result of these research findings, and following consultation with the Sheep Veterinary Society, the National Sheep Association and the National Farmers Union, the concept of Flock Health Clubs was developed by Fiona Lovatt of Flock Health Ltd. The basic principle is that members pay a monthly subscription to their veterinary practice to take part in regular discussion groups with other farmers. A Flock Health Club (FHC) is a business group of sheep farmers brought together by their vet who facilitates discussions and arranges farm visits alongside practical training sessions. The aim of the Flock Health Club is to promote farmer interaction with a sheep focused vet resulting in increased sheep expertise for both parties and to encourage better relationships between farmers and their local vets. Under the Flock Health Club banner, vets are also provided with continued professional development (CPD) to enhance their expertise, knowledge and confidence in sheep related issues.

The Flock Health Club concept was trialled through the formation of two pilot clubs in the north west and north east of England in 2015. These ran for 12 months. Following positive feedback from participating vets and farmers, a wider launch was initiated with provision of a number of vet CPD training and information sessions held throughout June and July 2016.

To assess the impact of FHC for vets and farmers, two studies were conducted: an interview study asking vets who run a FHC for their opinions (funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No 679302) and an online survey of sheep farmers in the UK and Ireland to identify the difference in their sheep lameness levels and management practices before and after joining the FHC.

3. Methods

2.1 Vet interviews

2.1.1 Study sample

Flock Health Ltd. provided a master list of 35 vet contacts who had previously agreed, in a Flock Health Club survey, to participate in future research. Of these 35 vets, 28 were still working at the same practice and running an FHC. Each vet was initially contacted by email informing them of the opportunity to take part in this case study and stating that they would be contacted over the next few weeks. Some of the vets replied to this email directly, and a convenient time for a short telephone interview to take place was arranged. If no return contact was received, the vets were contacted at their surgery and the details of the study discussed, after which they were invited to take part in a short telephone interview. There were 22 vets interviewed. Following the interview a written consent form for participation was sent to the vet for signature. Fifteen consents were returned, and it is the data from these practices that has been used in the analysis.

2.1.2 Questionnaire design

An interview guide, designed by the National Sheep Association (NSA), the Organic Research Centre (ORC), Flock Health Ltd and Nottingham University, was used for all telephone interviews. Interviews were conducted by the same researcher at the NSA (NN). Vets were telephoned at an agreed interview time and after reiterating the reason for data

collection, verbal consent to record the interview was requested, ensuring accurate transcription. The questions within the interview were grouped into five categories:

1. Information about the practice
2. Information about the client flocks
3. Information about the characteristics of FHC members
4. Information on relationships between the practice and local farmers
5. Information about the FHC and its activities

3.2 Survey

2.2.1 Study sample

The survey was distributed electronically by asking the vets that had previously been identified as either running a FHC or being interested in setting one up (n=355) to share a link with their farmers either at a FHC meeting or electronically. The link to the survey was also shared at the Sheep Breeders Round Table conference and using additional social media to reach as many farmers as possible. The survey was open for 4 months and responses were received between 4th November 2019 and 14th February 2020.

2.2.2 Survey design

The survey was divided into 4 sections. The first section contained questions about the flock type, size and whether the farmer was a member of the FHC or not. The second section addressed FHC members and asked details about their FHC. The third contained questions about lameness in their flock before and after joining the FHC and the fourth section investigated the farmer's use of medicine for lame sheep before and after joining the FHC. At the end of the questionnaire there was a statement of consent for the use of the information for the purposes of this research study in accordance with the General Data Protection Regulation (EU) 2016/679 (GDPR). The survey included a mixture of multiple-choice questions and open questions such as the percentage of lameness in the flock, and the satisfaction of the farmers with their ability to deal with lameness in their flock, expressed on a scale of 0 to 100.

2.2.3 Data analysis

The data was analysed anonymously. The data analysis was conducted using STATA 14 (Statacorp, USA). Descriptive statistics in the form of frequencies, means and medians were conducted on all the variables depending on the type of variable in question. The categorical outcomes derived from the multiple-choice questions were analysed using McNemar's test to compare before and after joining the FHC while for the continuous variables the Wilcoxon matched pairs signed rank test was used.

4. Results

3.1 Vet interviews

3.1.1 Characteristics of the veterinary practices

Of the 15 practices surveyed, six focussed solely on farm animals while the remaining nine were mixed practices. Of the mixed practices, some had completely separate farm animal and small animal divisions and others had designated vets that moved between farm animals and small animals. The numbers of farm vets employed per practice ranged from three to eleven. Thirteen practices reported that they were independent, with four of these also being

members of a national veterinary group. Two practices were part of a corporate veterinary group.

When questioned as to whether the vets in the practice had specific areas of expertise, a few had vets who only attended a specific species, while in the majority of practices, vets had preferences or biases, as evidenced by the following comment: *“If possible, we will hand clients on to the vet with that particular interest.”* A few vets expressed a clear preference for sheep and attended as many of these cases as possible. All practices had a range of clients, the numbers of each reflecting the size of the practice. Sheep were not the core source of income in any of the practices interviewed, dairy and beef cattle being the mainstay for farm only practices.

3.1.2 Broad descriptions of the flocks in the practice

The types and sizes of flock were influenced by locality. The majority of practices included lowland breeds and a few had hill flocks. Pedigree sheep were recorded in half of the practices with flock sizes ranging from 20 – 50 sheep. Flock sizes within practices varied depending upon the flock type: hill flocks were larger, with two practices recording flocks of 2000 plus ewes. The majority of practices treated flocks of 200 - 400 animals; all declared a range of flock sizes from a few animals (small holders and pedigrees) to a few larger flocks of over 800. Sheep were usually kept with a beef enterprise or in a few cases sheep were kept in conjunction with an off-farm job. In arable areas, practices were treating sheep integrated with the arable enterprise. When asked which breeds were most common, over half of the practices specifically identified mules as the most common breed. Dorsets were kept in a number of practices, Easycare, Lleyln, Swaledale flocks were mentioned and the pedigree flocks identified were either Texel or Suffolk.

3.1.3 Characteristics of FHC members

When questioned about the age of FHC members the only agreement between practices was that members were generally under 65 and those that attended were keen to learn, engaged and enthusiastic. It was observed that a balance of older experienced farmers and younger newer farmers was ideal, and one practice deliberately aimed to maintain this balance. FHC members were regarded as forward thinking and innovative, commercial and generally in the top 5 - 10% of farmers in the area, as expressed by the following quotes: *“They’re normally the better farms already, and generally the better farms and farmers drive themselves to get better”* and *“they are really trying to improve on their flocks, and get the best out of them. They’re quite motivated farmers compared to a lot of them”*.

3.1.4 Relationships between the practice and local farmers

Several practices expressed difficulty in engaging with sheep farmers in general because a core of sheep clients only ever contacted them in emergencies and the vet was called in for ‘disasters’. In addition, some of the vets stated that most sheep farmers are not very receptive to advice as explained in this quote: *“I find sheep farmers quite difficult to get to change. So, dairy farmers are used to changing but sheep farmers are much more like, well this is the way my dad did it and my grandad did it. I’ve been doing this for 40 years and I don’t think you’ve got anything to teach me”*. Every practice felt that contact with FHC members was better than with the average sheep farming client. FHC members rang the vet more, they actively sought advice, and they were engaged and keen to improve. FHC members tended to seek preventative measures, rather than react to disease or health problem once it presented itself. FHC members spent more time talking and were more aware of topics covered in FHC meetings and the impact on their farms.

3.1.5 The Flock Health Clubs

Flock Health Clubs in the practices interviewed had been running on average for two years and up to a maximum of 3 years. Membership ranged from 8 to 29 farmers. Only one out of 15 practices expressed disappointment with turn out at meetings, achieving around 25%; this club was the only one that had been running for less than 2 years. The majority of clubs had a meeting attendance rate of over 75%, with several achieving 100% (Figure 3). Most clubs were careful when they held meetings, timing them to fit the sheep farming calendar and one noted that if there was an external speaker or a practical demonstration, attendance was higher.

Every FHC vet interviewed agreed that if membership increased beyond a number that they felt optimised interaction (varying between 15 and 25) they would split the group. All agreed that smaller numbers encouraged interaction and farmers got to know each other better. Several groups recognised that the farmers that attended were of high calibre and they tried to discourage individuals who were opinionated, knew it all or didn't interact well with a group. Several practices actively selected participants so that the meetings would be congenial and effective. Potential members were also identified if the vet felt that they had a particular issue on their farm that could be addressed through FHC membership and act as a good demonstration tool for the group. The most popular format for meetings was to hold four per year (one practice held 5 – 6 per year). Farmers were noted as choosing informal discussion meetings with practical aspects held on farm in preference to meetings that involved more formal slide presentations.

A wide range of topics are discussed at FHC meetings, but every group runs lambing sessions. The topics covered can be broadly divided into lambing, growing lambs, lamb grading and slaughter, ewe management, tup selection and MOTs, parasites, antibiotic reduction and health issues, nutrition and pasture, handling and other topics of specific interest to the members. The majority of practices consulted the farmers as to which topics they would be interested in and one actively chose topics of relevance, for example if a number of farmers were affected by an issue. Most FHC vets claimed that they struggled with engaging the group in consistent benchmarking or data collection activities.

3.1.6 Is the Flock Health Club effective?

When vets were asked if they had seen changes in their members flocks since joining the FHC, all agreed that they had and gave a variety of examples. The most common changes were in parasite management, lameness and reduced lamb losses. Other changes included more use of testing (for example measuring colostrum quality, regular faecal egg counts or investigating anthelmintic resistance), changes in worming practices observed, uptake of FAMACHA scoring following *Haemonchus* outbreaks, better targeted antibiotic use as well as increases in vaccination rates, and post mortems. In general it was found that most vets considered the FHCs a success from the point of view of both the practice and the farmers, as exemplified in this quote: *“From a personal point of view [...] I know quite detailed information about each and every one of my flock health club members and their flock, and feel like if they ring me up with an issue I already am well in touch with their flock and we can get to the bottom of any problems fairly promptly because of it, [...] job satisfaction and enjoyment and just knowledge growth and all of those things, yes very successful. From a farmer point of view [...] they all try and come to the meetings and they are very full of*

discussion and questions with each other and myself, so I think that's quite a good sign that they are getting some enjoyment out of it". The FHCs were also praised as a way for vets to gain more knowledge about sheep as explained in the following comment: *"I do a lot more sheep work now than I did 3 years ago and I think the club has probably got quite a lot to do with that"*. However, a few vets commented that the members of their FHC were in the top end of farmers in their area and thus they had not necessarily seen much in the way of management changes as their management was already of high standard.

From the farmer point of view, the FHC farmers reported how much they appreciated having a vet who was interested in their flock and that they valued the opportunity to discuss sheep matters with both their vet and like-minded peers.

3.1.7 Challenges of Flock Health Clubs

When questioned as to the challenges of running a FHC the majority of responders were concerned about the time taken up by FHC, especially regarding the preparation and facilitation of meetings. Maintaining appropriate size of FHC was highlighted as being important to ensure efficiency. By keeping meetings small and congenial, the frustrations caused by time wasters and difficult clients were reduced. Vets also pointed out that they were trying to attend other sheep courses and professional groups to keep their knowledge up to date. Another concern was that running a FHC was used to draw clients to them, but now many practices were developing them, often because *"they feel they have to and feel dragged into it"*. This was explained in this comment: *"I think all vet practices now, it almost feels that everyone is doing one. They're sort of missing a trick if they're not. I think it should still be something that is individual to each practice"*. A number of vets expressed a feeling of running out of topics and being out of their comfort zone if exploring novel topics. It was acknowledged that information could be shared but *"what works in one practice doesn't necessarily work in another"*.

3.2 Survey

The survey was completed by 132 farmers, out of which 126 respondents were from the UK and 6 from Ireland.

When asked to describe their type of enterprise with an option to tick more than one option, 85 of the respondents classified theirs as a commercial flock, 35 as a pedigree flock and 4 as a hobby flock; 46 respondents defined their enterprise as progressively run, 22 as traditionally run and 12 as a small-holding. Additionally, 79 farmers defined their enterprise as lowland, 39 as upland and 21 as hill. The size of the flock varied: 33 farms had up to 200 ewes, 45 had between 201 and 500 ewes, 34 had between 501 and 1000 and 20 had over 1000 ewes.

Out of the 132 total respondents, 61 stated that they were members of a FHC. Of these 8 had joined in 2019, 10 in 2018, 23 in 2017 and 17 in 2016 or earlier. 55 farmers stated that their FHC had held a specific session on lameness. When asked about their attitudes before and after joining the FHC, it was clear that there was a significant change in many aspects: there was a significant increase in people considering the use of the Five Point Plan, a significant increase in the use of the foot rot vaccine and a significant reduction in routine foot trimming (Table 1).

There was also a significant increase in the farmer's confidence in their ability to deal with the lameness in their flock, which went from an average of 61% to 77% ($Z = -4.883$, $p < 0.001$) and an overall decrease in average lameness in the flocks since joining the FHC, from a flock average of 8.7% to 4.5% ($Z = 5.641$, $p < 0.001$, $n = 61$). The 71 farmers who were not members of FHC reported low levels of lameness (Median = 4% IQR (1-5 %)).

In terms of antibiotic use, 30% of respondents claimed that they “*didn’t use very much*” before joining the FHC and 33% said the same thing of after joining the FHC. The proportion of respondents who stated that they used “*an appropriate amount*” of antibiotics was 39% before joining the FHC and 57% after joining and the ones who used “*more than [they] would like*” decreased from 31% to 10% after joining the FHC ($Z= 2.173$, $p=0.031$, $n=61$).

Table 1 Proportion of respondents, Non -FHC members, members of a FHC, that replied yes or no to questions about their management practices related to lameness before and after joining the FHC ($n=61$).

Question	Non-FHC members (n=73)	FHC members (n=61)				Comparing Before and After joining the FHC
		Before joining Flock Health Club		After joining Flock Health Club		P value
		No	Yes	No	Yes	
Have you considered the Five Point Plan for lameness control?	77%	49%	51%	13%	87%	<0.001
Do you undertake routine foot-trimming in your flock?	15%	61%	39%	84%	16%	<0.001
Do you use foot-trimming to treat lame ewes?	11%	62%	38%	92%	8%	<0.001
Do you use foot-bathing as a routine treatment for lameness in your ewe flock?	56%	44%	56%	39%	61%	0.453
Do you use the foot rot vaccine?	41%	66%	34%	46%	54%	<0.001

5. Discussion

This is the first study to analyse the impact of FHCs on vet-farmer relationships and on the management practices of farmers who take part in the initiative, with a particular focus on specifically measuring changes in flock health parameters such as levels of lameness. The

FHC concept was developed as a directly research-led intervention. This study highlights the impact of the FHC concept and demonstrates it as a successful strategy for the sheep industry. Extrapolation of these results suggest that the implementation of FHCs more widely in the sheep industry has potential to improve interaction between sheep farmers and vets and ultimately improve sheep health and welfare.

The combination of qualitative and quantitative research on this topic has allowed the analysis of multiple aspects of the impact of FHCs: the interviews highlighted the perceived improved relationship between vets and farmers and the survey demonstrated improved management practices and better health outcomes.

The vets interviewed were positive overall about the success of the FHC and reported that they had improved relationships with its members, recognising that it was a good forum for these more forward thinking farmers to benefit from increased veterinary contact, to learn from each other and to feel supported enough to make positive changes to their flock management. This reflects wider evidence of peer to peer learning as a tool for implementing best practice (Wegner, 1998; Jansen et al., 2010)

The vets interviewed identified that running a FHC had improved their understanding of sheep farmers and their knowledge of sheep related issues. Previous research identified lack of sheep expertise as one of the barriers for a successful vet-farmer relationship (Kaler and Green, 2013; Bellet et al., 2015). Gaining this expertise has improved vet confidence in communicating with other sheep farmers. Vets reported that running a FHC demonstrated more widely that the practice was interested in both serving the needs of sheep farmer clients and championing the implementation of preventative measures in sheep flocks, thus delivering the needs identified by the Lowe report (2009), Kaler and Green, (2013), Bellet et al., (2015), Lovatt (2015) and Gascoigne (2016).

The consistently high farmer attendance at FHC meetings and their willingness to pay a subscription, suggested that the farmers perceived there were benefits from being part of a club. Certainly, for the cohort of sheep farmers prepared to buy into the FHC, when given access to information in a cost-effective and engaging way alongside the motivation provided by club membership, sheep farmers are inclined to follow advice and change their practices with a positive result on flock health. These results are a clear indication of a transition to more preventative care for sheep flocks, which aligns with the government aspirations in the Lowe report (2009) as well as in the Responsible Use of Medicine in Agriculture (RUMA) antibiotic targets (anon 2019).

These findings were further supported by the results of the farmer survey, which showed changes in management practices after joining the FHC, indicating that the information shared at the meetings impacted subsequent farmer behaviour. The survey provided specific evidence that, since joining the FHC, farmers reported an increase in their confidence in their ability to deal with lameness and measurable evidence that they had made key changes to evidence-based preventative measures in their management of lameness (such as increasing uptake of the industry recognised Five Point Plan, increasing use of foot rot vaccination and reducing their use of foot-trimming). These behaviour changes also resulted in improvements in flock health and welfare as measured by reductions in actual levels of flock lameness. A large-scale intervention study has demonstrated the effectiveness of a group led by a facilitator in the reduction of lameness in sheep in the UK (Grant et al., 2018). The current study adds to the evidence that farmer opinions and beliefs can be changed as a result

of being part of a FHC. Interestingly the respondents in the study who were not members of FHC already had low lameness levels and not significantly different to the lameness levels achieved by respondents after joining the FHC. This suggests that these non-FHC farmers were already undertaking lameness best practice. This could be explained by the recruitment method for the online survey – FHC members predominantly via their FHC vets and the non FHC members via social media and a progressive sheep farmer conference.

A limitation of this study is that the data have the potential for response bias, reflecting the opinions of those respondents who actively decided to take part. Despite this, data triangulation with both FHC vet interviews and FHC farmer survey responses suggest the results are robust. It would be useful to further compare the management of FHC members vs representative non FHC farmers to investigate the impact of attending the FHC. As a further limitation, our data on the impact of joining the FHC on lameness is derived from farmer estimations. Previous research suggest farmers can estimate lameness correctly (Kaler and Green, 2008). However, ideally it would be preferable for the impact of FHCs to be assessed on the basis of independent measurements of flock health though this clearly would depend on reliable flock data.

A major barrier to the success of the FHC was identified in the difficulty of collecting data for active benchmarking of the flocks between each other and from one year to the next. This was previously identified as a key barrier to sheep vets (Kaler and Green, 2013; Lima et al., 2018) and it is interesting that it is still an issue even with the more highly motivated farmers who are prepared to pay to join a FHC. There is a pressing need for simple to use and reliable methods of data collection and collation, which may be addressed by means of recent advances in precision technology (Vittis et al., 2020; Lima et al., 2018) though the authors consider that the consolidation of different currently available data collection tools is essential.

6. Conclusions

This study has shown that setting up a Flock Health Club within a practice has significant and measurable flock health benefits which we believe result from its ability to transform the relationships between the sheep farmers and vets involved and improve mutual confidence and motivation. Although there are barriers that need addressing, such as difficulties in collation of flock data, there appears to be much potential for the wider establishment of Flock Health Clubs to further benefit both the sheep industry and the agricultural veterinary profession.

7. Acknowledgements

The interview part of this study was supported by the European Union's Horizon 2020 Research and Innovation Action (RIA) through the project "Innovation for sustainable sheep and goat production in Europe (iSAGE) under grant agreement No 679302. The analysis of the survey data was funded by the University of Nottingham Impact award.

The authors would like to acknowledge the contributions of Samantha Mullender and Lindsay Whistance in designing the interview questionnaire.

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