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Understanding positive animal welfare through good stockmanship: insights from UK sheep farmers

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Scientific frameworks increasingly conceptualise good animal welfare as involving positive experiences, not just the prevention of suffering and pain. Yet less is understood about how farmers themselves conceptualise and pursue positive animal welfare in practice. This study explored how UK sheep farmers understand and pursue positive animal welfare and the extent to which their described practices align with contemporary scientific conceptions. Semi-structured interviews with 25 UK sheep farmers were analysed using reflexive thematic analysis. Participants described practices consistent with contemporary positive animal welfare, including behavioural choice and feed choice, but rarely conceptualised these as positive animal welfare interventions. Rather, these practices were conceptualised as outcomes of good stockmanship and health management. The participants also described competing economic and environmental considerations, highlighting the practical trade-offs involved in animal welfare improvement. The findings suggest that the participating farmers and contemporary scientific frameworks share similar aspirations but differ in how they conceptualise and achieve positive animal welfare. The findings contribute to debates on positive animal welfare by providing an empirically grounded, farmer-centred perspective on how positive welfare is understood and pursued within commercial sheep farming systems.

KEYWORDS

animal welfare, good life framework, positive animal welfare, reflexive thematic analysis, sheep farmers, stockmanship

1 Introduction

Positive animal welfare represents a development of traditional animal welfare paradigms, extending the focus from preventing suffering to also promoting positive experiences and enhancing animals' quality of life (Lawrence et al., 2019; Mellor, 2016; Rault et al., 2020a).

It is now consensually defined as the state in which animals experience predominantly positive mental states while developing competence, resilience, and opportunities to flourish (Rault et al., 2025). Earlier frameworks such as the Good Life framework (Edgar et al., 2013), and the Five Domains (Mellor et al., 2020; Mellor and Beausoleil, 2015) have been particularly influential in this context, proposing that animal welfare should extend

beyond meeting basic needs to include opportunities for comfort, confidence, interest, pleasure, and positive mental states. Although a number of indicators, assessments and protocols of positive animal welfare have been proposed (Keeling et al., 2021; Mattiello et al., 2019; Papageorgiou and Simitzis, 2022), these approaches have yet to be adopted as part of industry practice and have seen limited application on farms. Recent conceptual developments have also proposed multiple facets through which positive experiences can be conceptualised and assessed (Rault et al., 2020a). These developments highlight the growing sophistication of positive animal welfare science but also the absence of a single universally adopted conceptual framework.

While positive animal welfare has been developed as a scientific framework grounded in empirical research, societal interpretation and implementation are shaped by the values, experiences, and practical realities of different stakeholder groups (Muhammad et al., 2024; Vigors, 2019). Consequently, scientific frameworks and societal perspectives share broad aspirations to promote positive experiences while minimising pain and suffering, although they are not necessarily identical (Vigors et al., 2021). Assessments of what is practical and achievable within livestock systems are deeply contingent on stakeholder situation and context (Muhammad et al., 2022).

Participatory research has highlighted that while farmers may endorse certain positive animal welfare opportunities, they often contest others, particularly where perceived practicality or relevance to daily management is lacking (Stokes et al., 2022). Such findings demonstrate the importance of understanding how positive animal welfare concepts are interpreted within livestock systems. However, while previous research has largely focused on identifying positive animal welfare opportunities or assessing stakeholder attitudes towards them (Brunt et al., 2024; Stokes et al., 2020), considerably less attention has been paid to how farmers themselves understand the process through which positive animal welfare is achieved.

In livestock production, animal welfare improvement has traditionally been associated with good stockmanship, encompassing animal observation, husbandry skills, health management, gentle handling, and responsive care (Hemsworth, 2003; Webster, 2011). This is supported by evidence that farmer attitudes and management behaviour are directly associated with on-farm welfare outcomes in sheep (Munoz et al., 2019). This raises an important question that guided our study: whether sheep farmers operationalise positive animal welfare as part of their management practices. Addressing this question is important for understanding how the concept aligns with the realities of livestock management and for identifying pathways to more effectively embed welfare improvements in practice, thereby bridging the gap between theoretical concepts and practical applications (Rault et al., 2023).

2 Methods

2.1 Research design

This study employed a qualitative research design, utilising semi-structured interviews with United Kingdom (UK) sheep

farmers. A qualitative approach was deemed appropriate, as the research aimed to explore how UK sheep farmers understand and pursue positive animal welfare and the extent to which their described practices align with contemporary scientific conceptions. The study was informed by a social constructionist perspective, recognising that participants construct meanings of positive animal welfare through their everyday experiences and social interactions (Burr and Dick, 2017; Schwandt, 1994). A social constructionist approach was selected because it provides a flexible and interpretive approach to exploring how participants construct meanings around complex social phenomena, allowing participants' understandings to be examined within their social contexts rather than organising data analysis around predefined theoretical categories.

2.2 Participant recruitment and sampling

Participants were recruited using purposive and snowball sampling techniques. Purposive sampling was used to recruit UK sheep farmers with experience of day-to-day flock management and animal welfare decision-making across a range of production systems, flock sizes, and geographical regions. Participants were initially identified through gatekeepers associated with sheep industry organisations and by direct approaches to sheep farmers. Snowball sampling was subsequently used, whereby participating farmers recommended other sheep farmers who met the inclusion criteria. Additional recruitment was undertaken through social media platforms.

In total, the sample included 25 farmers representing a range of flock sizes, management approaches, and geographic locations. Please see Table 1 for details about the participating farmers' information. Participants were involved primarily in meat, wool, or mixed production, with farms spanning lowland, upland, hill, marshland, and regenerative grazing systems. Flock sizes ranged from small family-operated enterprises to larger commercial farms, and participants varied in age, farming experience, and management philosophy. This diversity enabled the study to capture a broad range of perspectives on animal welfare improvement across different sheep farming contexts.

Participant recruitment continued alongside iterative data analysis and was reviewed against the study aim, sample specificity, and quality of interview dialogue, consistent with the principles of information power (Malterud et al., 2016). As data collection progressed, subsequent interviews primarily enriched and refined existing interpretations rather than extending the analysis's conceptual scope. The research team therefore agreed that the dataset provided sufficient breadth and depth to address the study aims, and recruitment ceased.

2.3 Data collection

The question guide was piloted before data collection was commenced. The study was conducted in accordance with the Market Research Society Code of Conduct (Market Research Society, 2019) and approved by the Ethics Committee of the Royal Agricultural University (protocol code 20213216; approved 18 November 2021). All respondents were asked by a standardised proforma to confirm they were happy to take part in the study and for their data to be

anonymised for any future publication. Semi-structured interviews were conducted by telephone between December 2021 and March 2022, ranging from 20 to 60 minutes in duration. The interview guide and guiding questions are provided in Table 2. All interviews were conducted by the first author, whose background as an emerging animal welfare social scientist facilitated informed discussion while requiring continual reflexivity throughout data collection and analysis. No prior personal relationships existed between the participants and the researchers before recruitment. The interviews examined

participants' knowledge of positive animal welfare, how they implement on-farm improvements, factors influencing welfare-related decision-making, as well as their knowledge and discourses around (positive) animal welfare.

2.4 Data analysis

The interviews were transcribed using Otter.ai (Version 3.5.0, Otter.ai Inc., Los Altos, California, USA) and transcripts were

TABLE 1 Characteristics of the participating sheep farmers (n = 25).

Participant	Region	Farm size (ha)	Flock size (approx.)	Enterprise type	Main breeds/system	Production system	Management approach*
P1	Southwest England	~243 ha	~1,000 sheep	Mixed sheep & beef	Commercial breeding sheep	Marginal/upland	Not stated
P2	England	60 ha owned + 400 ha rented	~1,600 sheep	Mixed livestock	Commercial sheep	Lowland	Holistic; regenerative principles
P3	Orkney, Scotland	14 ha	Not stated	Sheep only	Boreray sheep	Moorland/permanent pasture	Agroecological; conservation breeding
P4	England	~162 ha	400–500 sheep	Sheep	Gotland, Shetland composites	Not stated	Conservation grazing; low-input
P5	Devon, England	~146 ha	~300 sheep	Sheep only	Australian Merino	Upland/hill landscape	Extensive
P6	Devon, England	Not stated	~850 sheep	Mixed sheep & cattle	Commercial + Herdwick	Coastal	Rotational grazing; extensive
P7	South Wales	~121 ha	~650 sheep	Mixed livestock	Commercial sheep	Not stated	Not stated
P8	Leicestershire/Northamptonshire	Not stated	Not stated	Mixed livestock	Commercial sheep	Lowland	Conventional/traditional management
P9	England	~49 ha	~300 sheep	Sheep & dairy enterprise	Rare longwool breeds	Marshland	Extensive grass-based management
P10	West Yorkshire	~10 ha + seasonal grazing	~100 sheep	Mixed livestock	Texel, Ryeland, Greyface Dartmoor, Kerry Hill	Hill/lowland	Mixed commercial & pedigree
P11	South Devon, England	~121 ha	~700 sheep	Mixed sheep & cattle	Poll Dorset	Lowland	Commercial meat; Red Tractor Assured
P12	Devon, England	~85 ha + rented grazing	~400 sheep	Sheep, beef & trout	Devon Closewool	Upland	Extensive grass-based
P13	England	~202 ha	~550 sheep	Sheep and arable	Texel × Cheviot	Not stated	Not stated
P14	England	~100 ha	~560 sheep	Sheep & arable	Clun, Bleu du Maine, Meatlinc, Charollais	Lowland	Rotational grazing; herbal leys
P15	Wales	~202 ha	~1,400 sheep	Pedigree breeding	New Zealand Romney, RumTex	Hill farm	Outdoor lambing; low-input
P16	Wales	~134 ha	Not stated	Sheep, poultry & calves	Not stated	Lowland	Outdoor lambing; grass-based
P17	Devon, England	Smallholding	8–10 sheep	Wool enterprise	Whiteface Dartmoor	Not stated	Regenerative grazing
P18	England	~2,000 ha	~2,000 sheep	Commercial meat	Not stated	Not stated	Extensive grazing
P19	England	~81 ha	Not stated	Pedigree & commercial	Terminal sire sheep	Lowland	Shelter-based extensive management
P20	England	~36 ha	120 breeding sheep	Commercial meat	EasyCare sheep	Lowland	Low-input grass-based
P21	Wales	~40 ha	~250 sheep	Sheep & beef	Not stated	Lowland	High-welfare mixed livestock
P22	England	Not stated	Not stated	Pedigree & beef	Cheviot, Black Galloway	Upland	Not stated

(Continued)

TABLE 1 Continued

Participant	Region	Farm size (ha)	Flock size (approx.)	Enterprise type	Main breeds/ system	Production system	Management approach*
P23	England	Smallholding	~100 sheep	Meat & wool	Swaledale × Bluefaced Leicester	Not stated	Low-input grass-based
P24	England	Not stated	Not stated	Organic sheep enterprise	Not stated	Lowland	Soil Association organic
P25	England	~1,416 ha (324 ha grass)	~2,250 sheep	Commercial & pedigree	North Country Mule, Charollais	Marginal grassland	Not stated

Participants represented a diverse range of geographical regions, flock sizes, enterprise types, and management approaches across the UK sheep sector. Farm and participant characteristics were self-reported by participants during the interviews. "Not stated" indicates information that was not reported by the participant during the interview. Management approach notes in the context of this study.

- i. Holistic: Whole-farm management integrating environmental, economic and social considerations.
- ii. Regenerative: Management intended to improve soil health, biodiversity and ecosystem functioning.
- iii. Low-input: Farming with relatively low reliance on external inputs and intensive management.
- iv. Conservation grazing: Grazing used to maintain or enhance habitats and biodiversity.
- v. Agroecological: Farming informed by ecological principles, including biodiversity and system resilience.
- vi. Grass-based: Production relying predominantly on grazed pasture and forage.
- vii. Extensive: Lower-intensity grazing systems with relatively low stocking densities.
- viii. Conventional/traditional: Common commercial sheep management practices.

checked against the audio recordings for accuracy before being imported into NVivo 12 (QSR International Pty Ltd., Victoria, Australia) for data management and analysis. Data were analysed using reflexive thematic analysis following the six-phase approach outlined by Braun and Clarke (2006).

Analysis began with repeated readings of the transcripts to build familiarity with the data and identify preliminary patterns. Initial coding focused on participants’ descriptions of welfare improvement practices, stockmanship, decision-making processes, and references to positive animal welfare. Coding was iterative and remained open to refinement throughout the analytical process as interpretations developed through continued engagement with the dataset. The developing analysis was subsequently considered alongside concepts from the positive animal welfare and stockmanship literature (Burton et al., 2012; Vigors and Lawrence, 2019; Vigors, 2019), to identify areas of divergence, convergence and conceptual novelty, with the literature serving as an interpretive reference point rather than as a source of *a priori* coding categories. These concepts guided analytical interpretation but did not constitute a predetermined coding framework (Braun and Clarke, 2022).

Theme development involved continual reflexive engagement between coded extracts, the complete dataset, and relevant literature. The first author undertook the coding, with emerging ideas discussed with the supervisory team (J.E.S., L.M. and I.Y.H.) to challenge assumptions, consider alternative explanations, and deepen analytical insight. As part of this process, I.Y.H. independently reviewed the coding of three transcripts to facilitate critical discussion of the developing analysis. This review aimed to enhance reflexivity and develop richer, more nuanced understandings through collaborative dialogue. Candidate themes were developed through the primary researcher’s interpretive engagement with the data, informed by these discussions, rather than verified through coding agreement (Braun and Clarke, 2022). This iterative process ensured the final themes provided a coherent and conceptually meaningful interpretation of participants’ accounts. The

researchers’ reflective mapping between interview objectives, questions, codes and themes is provided in Table 3.

3 Findings

Participants generally described improvements in animal welfare as centring on health management and good stockmanship. Through the researchers’ interpretive analysis, positive animal welfare was understood to emerge from these practices. Several practices described by participants were identified by the researchers as being consistent with contemporary positive welfare frameworks, although participants themselves did not explicitly frame them as positive welfare interventions. Rather, such practices were embedded within their farming cultures centred on good stockmanship, proactive and adaptive care. Three overarching themes emerged from the researchers’ analysis, with several subthemes: (1) stockmanship as a pathway to animal welfare improvement, (2) health management as the foundation of a good life, and (3) positive experiences as emergent outcomes of good farming. These themes are now discussed in detail.

3.1 Stockmanship as a pathway to animal welfare improvement

When asked how they improve the welfare of their sheep, the interviewed farmers described stockmanship skills and practices such as detailed daily observation and close familiarity with their flock as the foundation of good welfare. Central to these accounts was the ability to recognise subtle behavioural or physical changes before they developed into more serious health or welfare problems. As the interviewed farmers described, this ability reflects an intuitive judgement developed through years of experience. As Farmers 4, 8 and 15 explained:

“A good stockman is somebody who’s got years of seeing problems and being able to spot things really early ... it’s

TABLE 2 Semi-structured interview guide and its contribution to the present analysis.

Interview stage	Research objective	Interview question areas (examples)	Purpose in the present analysis	Contribution to the findings
Stage 1. Farmers' own understandings	Explore participants' own understandings of animal welfare	Animal welfare; characteristics of a good life; indicators of good welfare	Elicit participants' own language and understandings of animal welfare before introducing scientific terminology	Analysed separately
	Explore animal welfare improvement practices	Welfare improvement practices; specific interventions	Explore practical approaches to improving animal welfare	Themes 1 and 2
		Stockmanship; daily management; human–animal relationships	Explore how stockmanship is understood and enacted in everyday farming	Theme 1. Stockmanship as a pathway to animal welfare improvement
	Explore welfare-related decision-making	Management decisions; intervention choices	Examine the practical, ethical, and economic factors influencing welfare decisions	Subtheme 3.1. Trade-offs in delivering positive welfare
	Exploring practices that promote positive animal welfare	Positive animal welfare practices; opportunities for positive welfare	Explore participants' views on practices that may provide opportunities for positive animal welfare.	Theme 3. Positive experiences within farmers' understandings of good farming. Subtheme 3.2. Regenerative farming as supporting positive welfare
Stage 2. Introducing the scientific concept	Explore perceptions of positive animal welfare	Positive animal welfare; understanding of the term; perceived usefulness; relationship to good welfare	Examine participants' interpretations of the scientific concept after first eliciting their own perspectives	Analysed separately
Stage 3. Human–animal relationships and broader reflections	Explore how human–animal relationships, farmer motivations, and job satisfaction influence stockmanship and animal welfare	Motivations for sheep farming; job satisfaction; rewarding aspects of sheep farming	Explore how participants' relationships with their sheep, motivations, and job satisfaction shape stockmanship and everyday animal welfare practices	Analysed separately
	Explore knowledge exchange and farmer learning	Sources of welfare information; trusted advisers; farmer networks; knowledge exchange	Outside the scope of the present manuscript; analysed separately within the wider research programme	Analysed separately

The interview guide was designed to first elicit participants' own understandings of animal welfare and welfare improvement before introducing the scientific concept of positive animal welfare. Themes presented in this manuscript were developed through reflexive thematic analysis across the dataset and therefore draw on multiple interview domains rather than corresponding directly to individual interview questions. The interview guide formed part of a broader research programme examining farmers' understandings of positive animal welfare. Interview domains relating to knowledge exchange, farmer learning, and the language and problematisation of positive animal welfare informed separate analyses addressing different research questions and are therefore outside the scope of the present manuscript (Muhammad et al., 2024).

almost instinctive because you've seen it before". (Farmer 4)

"You get to know your sheep. You know which ones are quiet, which ones are bold, which ones hang back. And when one of them changes, you notice. That's the main thing – noticing before it becomes a problem". (Farmer 8)

"I walk them every day. Not just from the quad bike – I get in among them. You see things that way. A sheep that's just standing a bit apart or not getting up as quick when you come near. That's when you pick things up, before they go downhill". (Farmer 15)

before these became clinically significant. This process reflects an embodied and relational form of knowledge in which welfare is assessed through holistic observation which can prevent negative outcomes. Farmers 5 and 20 similarly emphasised that this capacity is acquired through accumulated experience and close familiarity with their animals rather than through formal training alone:

"The more time you spend with them, the more you understand what's normal for them. Then when something changes, you notice it straight away." (Farmer 5)

"A beginner might see a field of sheep and think they all look the same. But after a while you see the one that's not quite right, even if you couldn't say exactly what's wrong." (Farmer 20)

These accounts suggest that good stockmanship involves more than routine daily health monitoring for diseased or injured animals. Farmers interviewed described developing an in-depth understanding of the normal behaviour of individual animals and the flock, enabling them to identify subtle deviations in posture, movement, feeding behaviour, social interactions or demeanour

Other interviewed farmers also associated good stockmanship with sheep being able to function autonomously, including lambing without unnecessary intervention and expressing natural behaviours with minimal disturbance. Farmer 2 described adopting a deliberately low-intervention approach:

TABLE 3 Summarises the analytical pathway from interview objectives and question areas to illustrative codes and the principal themes developed through reflexive thematic analysis.

Interview objective	Interview question areas contributing to the analysis	Illustrative codes	Overarching theme	Subtheme
Explore farmers' understandings of animal welfare and positive animal welfare	Definitions of animal welfare; awareness and understanding of positive welfare; characteristics of a good life; indicators of good welfare	Good welfare; high welfare; contentment; thriving; happiness; behavioural expression; curiosity; play; social relationships; choice; autonomy; quality of life	Theme 3. Positive experiences within farmers' understandings of good farming	—
Examine how farmers improve animal welfare through everyday management	Welfare improvement practices; stockmanship; daily observation; management interventions; human–animal relationships	Daily observation; knowing individual sheep; early detection; stockman's eye; intuitive judgement; gentle handling; trust; close familiarity; responsive care	Theme 1. Stockmanship as a pathway to animal welfare improvement	—
Explore how farmers develop and adapt welfare practices	Welfare improvement practices; learning from experience; management decisions; responses to flock outcomes	Trial and error; experiential learning; continual reflection; adaptation; flexible management; questioning standard practice; learning from animal responses	Theme 1. Stockmanship as a pathway to animal welfare improvement	Subtheme 1.1. Heuristic learning and adaptive management
Examine the role of health management in farmers' understandings of good welfare	Disease prevention; flock health planning; nutrition; breeding; vaccination; parasite control; veterinary intervention; grazing management	Preventative health; healthy animals; disease control; vaccination; breeding for resilience; nutrition; parasite management; flock health plans; capacity to thrive	Theme 2. Health management as the foundation of a good life	—
Explore how farmers recognise positive experiences within everyday farming	Positive welfare; good quality of life; behavioural indicators; natural behaviour; social interaction; environmental choice	Excitement; anticipation; inquisitiveness; play; maternal bonding; grazing choice; environmental exploration; social stability; contentment	Theme 3. Positive experiences within farmers' understandings of good farming	—
Understand factors influencing welfare-related decision-making	Management decisions; intervention choices; welfare improvement practices; economic and practical constraints	Economic constraints; labour availability; veterinary costs; productivity; value of animals; risk assessment; treatment decisions; balancing priorities	Theme 3. Positive experiences within farmers' understandings of good farming	Subtheme 3.1. Trade-offs in delivering positive welfare
Examine participant-led accounts of farming systems that may support positive welfare	Regenerative farming; grazing management; environmental stewardship; pasture diversity; animal choice	Rotational grazing; diverse pasture; improved nutrition; environmental choice; autonomy; natural behaviour; fresh grazing; environmental stewardship	Theme 3. Positive experiences within farmers' understandings of good farming	Subtheme 3.2. Regenerative farming as supporting positive welfare

The table illustrates how multiple interview objectives and question areas contributed to the development of each theme through reflexive thematic analysis. Themes were not derived from individual interview questions in a one-to-one manner; rather, they were developed through interpretive engagement with patterns across the full dataset. Only the themes and subthemes reported in this manuscript are included. Separate analyses from the wider research programme examined the language, communication, and problematisation of positive animal welfare and have been reported elsewhere (Muhammad et al., 2024).

“The less you have to do with the sheep, the better. Because they are enjoying their lives, they’re doing exactly what they want to do, and they are healthy. And so its safer if you’re an observer of what’s going on.”

Farmer 5 also highlighted the importance of developing trusting relationships with their sheep and how being a good stockkeeper means you can understand what your sheep are communicating with their demeanour:

“I know they trust me because they approach me voluntarily, not just for food. If they come to me, it’s because they want to be with me. When I look at them and they look at me, I can understand their unspoken messages.”

These quotations suggest that participants in this study viewed stockmanship as extending beyond disease detection to encompass continuous holistic observation, knowing their sheep as individuals, recognising subtle changes in behaviour and demeanour, and developing trusted human–animal relationships. Participants

viewed these practices as integral to creating opportunities for sheep to experience a good life. From the researchers’ interpretive analysis, these stockmanship practices were understood as important means through which positive animal welfare could be promoted, rather than participants conceptualising it as a distinct set of interventions.

3.1.1 Heuristic learning and adaptive management

Alongside observation and judgement, participants described animal welfare improvement as a process of continual learning through experience. The participants reported improving their animal welfare practices through an iterative process of experimentation, reflection on outcomes, and subsequent adjustments. Management decisions were often based on trying different approaches, observing the outcomes, and refining practices over time. In this sense, stockmanship was described as an evolving process of practical learning rather than the application of predetermined rules and procedures. Farmer 1 described this process as one of continual experimentation with how and when to treat endemic

diseases, explaining that management practices were adapted according to the responses of the sheep and practices were continued only when they consistently improved welfare:

“It’s been trial and error ... I know what the book says, but things move on. We have had to learn what works for our flock.” (Farmer 1)

Similar patterns emerged elsewhere in the interviews. Farmer 4 explained how previous experiences with pneumonia following weaning prompted changes to vaccination and weaning strategies. This shows that management practices were evaluated and modified in response to the health and welfare of the flock:

“I used to vaccinate the whole flock because that’s what everybody did ... I started to question why I was doing it ... I changed the vaccines, and when that didn’t solve the problem, I stopped weaning the lambs. After that, I didn’t get a single case of pneumonia.” (Farmer 4)

Farmer 12 described a comparable approach when discussing John’s disease, using health records and breeding information to identify recurring disease patterns and refine future management decisions:

“I can look at the data ... make correlations ... We’re vaccinating now for John’s, and if I get a ewe that has it, I keep an eye on her offspring to try and manage it better.” (Farmer 12).

Although participants recognised the value of formal flock health and welfare plans, they referred back to their accumulated experience, embedded within established farming cultures, as guiding everyday management rather than routinely consulting written plans, which were often viewed as serving assurance or regulatory requirements as well as herd management. As Farmer 7 reflected:

“In all honesty, I probably do not look back at the flock plan enough to check if I am sticking to it. I probably, you know, it is all it is what I can remember from it [that I try to do], I then try and put in practice for the next year.”

Instead, when improving animal welfare daily, farmers in this study appear to rely on their technical “know-how” tied to experience and adaptive management. Farmer 10 explained that while there is no formal written plan, the approach remains flexible and responsive:

“We have a plan ourselves. We have not consulted with our vet, but my granddad was a vet. So, it is kind of unofficially discussed with that. And we just follow that. So like this time of year, we will be doing our Heptavac injections. But it is not like an official written-down thing. We will write it down once we have done it. If suddenly the weather changes and we need to bring them in at a different time to what we originally thought, we keep it quite flexible in responding to the changing environment.”

Across the interviews, participants consistently portrayed stockmanship as an iterative process in which management practices were continually refined through observation, previous experience, and the responses of individual animals. Improvements in animal welfare therefore emerged not from following fixed protocols but from adaptive learning based on welfare outcomes. This enabled farmers interviewed to tailor management to the changing health and welfare needs of their flock.

3.2 Health management as the foundation of a good life

For farmers in this study, discussions of animal welfare improvement began with maintaining animal health as a prerequisite. Participants described health as the foundation upon which other aspects of welfare could be achieved. Across the interviews, references to healthy animals, disease prevention and maintaining sheep capable of thriving within the production system consistently emerged when participants discussed what constituted good animal welfare. However, health was generally presented as a necessary, rather than sufficient, condition for good welfare, with participants also referring to behavioural expression, appropriate resource provisions, stockmanship and positive human–animal relationships as important contributors to a good life. As Farmer 11 explained:

“I would put health probably at the top, because if they’re not healthy ... it doesn’t matter that you’ve provided them with some shade or lovely bedding ... if they’re actively ill, they won’t give a monkeys about it.”

Disease prevention was valued not simply because it reduced illness but because healthy animals were viewed as more capable of thriving, expressing normal behaviours, and experiencing a good quality of life:

“We found our John’s about four or five years ago, so now we’re vaccinating for John’s ... trying to investigate all the reasons why there might be an issue and follow any of the advice that’s given ... so that we have healthy, happier sheep.” (Farmer 12)

“Health and welfare, the two run hand in hand. If we want our stock to perform at a level that is going to be financially beneficial for us, then they need to be fit, healthy and looked after the best way we possibly can.” (Farmer 25)

Health management was therefore understood not as an end in itself but as the basis from which broader welfare outcomes could emerge and sheep could have the potential for a good life.

3.3 Positive experiences within farmers’ understandings of good farming

When describing what they considered to be a good quality of life for sheep, participants referred to animals that were active,

thriving, content, socially settled, and able to express natural behaviours. These descriptions emerged from participants' own accounts and align with opportunities identified within positive animal welfare frameworks, although farmers in this study rarely described them using the scientific terminology associated with positive animal welfare. For example, Farmer 3 described the behavioural response of sheep when moved onto fresh pasture:

"Well, if they see me walking down the hill, and they can see me from a distance walking towards them. And they all stop what they are doing. And they all gather towards the electric fence, hoping something will happen ... if they see me switch off the energiser and start unhooking the fence, you can see the excitement on their faces. And then I move it, and they move into the next grazing section. And some of them will be leaping in the air. They are excited to know what plants might be there ... You see sheep leaping around, and they do it"

Farmer 3's account illustrates that participants recognised and valued positive affective experiences, including anticipation, excitement and apparent playfulness. However, these experiences were described through everyday observations of sheep behaviour rather than framed explicitly as examples of positive animal welfare or positive affective states. Similarly, Farmer 5 explained that once sheep were healthy and their basic needs had been met, they displayed curiosity and explored their surroundings:

"Once they're content, you see them being inquisitive ... they will wander off, investigate things, interact with one another. That's when you know everything's right." (Farmer 5)

Similarly, participants described opportunities for social interaction, maternal bonding, grazing choice and the expression of natural behaviours as characteristics of sheep living well:

"We breed for ewes with maternal, high maternal traits and lambs that are vigorous at birth. So basically, we've got a lamb that wants to live and the ewe that wants to look after its lamb. And when you put the two together, your losses are reduced." (Farmer 1)

"They have a diverse environment around them. So they have the choice of where they lie down and what they eat, what area they're in." (Farmer 2)

"If you split up groups of sheep, I mean I hate splitting mobs of sheep and I avoid doing it as much as I can ... we don't wean early we wean quite late ... the ewe lambs we just leave with their mothers we don't bother to remove them." (Farmer 5)

These accounts suggest that participants recognised and valued a range of experiences consistent with contemporary positive welfare frameworks, although they rarely described them using the conceptual language of animal welfare science. Instead, participants explained these experiences through the language of good farming, good stockmanship and everyday livestock management.

Interpreted through the lens of contemporary positive welfare frameworks, these accounts indicate that many practices associated with positive welfare were embedded within participants' broader understandings of good animal care rather than conceptualised as a distinct management objective.

3.3.1 Trade-offs in delivering positive welfare

Although the farmers participating in this study described improving welfare as central to good stockmanship, they recognised that animal welfare decisions rarely occurred in isolation from economic, labour, and management considerations. Instead of seeing animal welfare improvement as simply maximising positive experiences, they described balancing competing priorities while maintaining healthy, thriving sheep. One frequently discussed trade-off concerned the financial realities of livestock farming. Participants acknowledged that animal welfare decisions sometimes had to be made within the economic constraints of commercial farming, especially when veterinary intervention was costly. Reflecting on a neighbouring sheep farmer in a remote area, Farmer 8 explained:

"Before he picks the phone up, he's got to put a value on that sheep's life because he's got to pay for a vet to do 100 minutes of driving before they've even seen the animal." (Farmer 8)

Labour availability was a related constraint on welfare improvement. Some of the farmers in this study recognised many animal welfare improvement practices required considerable time and labour, resources not always available in commercial sheep enterprises. As Farmer 6 explained:

"It's a lot of man hours ... well, woman hours in my case ... you've got to make the effort. People can't afford to put in the time and effort because it's not paying off. At the end of the day, you've got to make money. You've got to make a business work." (Farmer 6)

Trade-offs also emerged around competing personal objectives. Participants recognised improving animal health did not always align with maximising productivity. Instead of assuming healthier sheep were always the most productive, participants described making breeding and management decisions to balance both outcomes. As Farmer 7 stated:

"Sometimes your healthier sheep are not necessarily the most productive ... it's trying to get the balance between health and productivity." (Farmer 7)

The farmers' quotes here suggest that the participants did not necessarily view welfare improvement as simply maximising positive experiences. Delivering positive welfare required continual negotiation between animal needs, economic viability, labour availability, and production objectives. Positive welfare emerged not from the absence of competing demands but from farmers' ongoing efforts to balance them in everyday livestock management.

3.3.2 Regenerative farming as supporting positive welfare

Although not all farmers interviewed discussed regenerative farming, some described management practices associated with regenerative livestock systems that support animal health and welfare. They mentioned diverse pasture, rotational grazing, improved nutrition, and giving sheep more choice over where they grazed and rested, creating environments where animals appeared healthier and better able to thrive. Farmer 2 explicitly linked regenerative farming to improved welfare, explaining that the approach aimed to improve nutrition while creating more diverse environments in which sheep could express natural behaviours and exercise greater choice.

“Practically, we are through the regenerative farming approach ... hopefully their nutrition is much better. They have a diverse environment around them. So, they have the choice of where they lie down and what they eat.” (Farmer 2)

Similarly, Farmer 16 described rotational grazing as benefiting both land productivity and sheep welfare by allowing animals to graze more naturally.

“We do rotational grazing because we think it’s better for the sheep ... and it’s better utilisation of the grass.” (Farmer 16)

Others associated regular access to fresh grazing with healthier and more contented sheep. Farmer 20 explained that providing fresh pasture every day had noticeably improved the condition of sheep brought onto the farm.

“Their condition has gone better since they have come to us because we are giving them fresh grass all the time ... the environment that they can thrive in.” (Farmer 20)

Among the farmers who discussed regenerative farming, these practices were described not only as supporting environmental sustainability but also as creating conditions in which sheep could express natural behaviours, exercise greater choice and autonomy, experience novelty, and thrive. For these participants, environmental stewardship and positive welfare were often seen as complementary rather than competing goals.

4 Discussion

This study explored how UK sheep farmers understand and pursue positive animal welfare and the extent to which their described practices align with contemporary scientific conceptions. Participants generally described positive experiences as indicators of good stockmanship rather than as a separate management objective labelled “positive welfare”. Although they rarely used scientific terminology, they described numerous practices and outcomes consistent with contemporary positive welfare concepts. This distinction may reflect differences between scientific welfare

frameworks and the descriptive concepts practitioners use to understand welfare in everyday farming (Paul and Mendl, 2018).

4.1 Positive welfare and the role of the stockman

Scientific frameworks for positive welfare, such as the Five Domains model (Mellor et al., 2020; Mellor and Beausoleil, 2015) and the Good Life framework (Edgar et al., 2013), typically structure welfare into domains—nutrition, environment, health, behaviour, and mental state—that interact to produce positive welfare outcomes. These frameworks are underpinned by the assumption that positive welfare is achieved when animals have access to conditions that promote positive experiences and limit negative ones. The implicit logic is that positive welfare opportunities, experiences, and outcomes are related. The Good Life Framework proposes a graduated provision of welfare-enhancing resources and opportunities, with higher tiers offering animals greater opportunities to experience positive welfare, rather than implying a linear progression of positive experiences themselves (Edgar et al., 2013).

Participants in this study described positive animal welfare from the perspective of the stockperson, focusing on husbandry, observation, experience and responsive care. Although these perspectives begin from different points, they need not be viewed as competing explanations of positive animal welfare. For these participants, stockmanship, husbandry, health and positive experiences were not described as separate concepts but as interconnected elements of good farming. From the researchers’ interpretive perspective, these accounts suggest that the husbandry and stockmanship practices described by participants create the conditions through which positive welfare opportunities become available to animals. In this sense, scientific frameworks and participants’ accounts may be understood as describing different levels of the same process: scientific frameworks emphasise the opportunities afforded to animals, whereas participants emphasise the husbandry and stockmanship practices through which those opportunities are created.

These findings suggest that differences between stakeholder groups may lie more in conceptual framing than in fundamentally different welfare aspirations. Participants approached the discussion of animal welfare from a different conceptual starting point. Instead of using the language of positive welfare opportunities and affective states, they described good stockmanship, husbandry, observation, experience, and responsive care as key elements of good farming. This interpretation aligns with previous research (e.g., Vigors and Lawrence, 2019; Buddle et al., 2021), which found that livestock farmers tend to emphasise husbandry, health, and stockmanship in their understanding of good welfare. It also supports the observations of Stokes et al. (2022), who found that dairy farmers and scientists broadly agreed on what constitutes a good life for farm animals despite using different conceptual language. Viewed alongside Brunt et al. (2024), the present findings suggest that although positive welfare is often described as an aspirational goal within professional discourse, many practices consistent with positive welfare may already be embedded within everyday stockmanship, even if they are not articulated using that terminology.

For example, the importance of developing trusted relationships and positive experiences with stockkeepers aligns with the positive welfare opportunity of confidence described by [Edgar et al. \(2013\)](#). Similarly, participants' focus on anticipatory behaviours in sheep when given fresh grazing opportunities aligns with the positive welfare opportunity of interest, by providing enriched environments and meaningful choices. The prioritisation of health also aligns with the healthy life opportunity, highlighting the importance of effective, ongoing, preventative management of animal health and welfare. These findings suggest important conceptual similarities between participants' accounts and the opportunities described within the Good Life framework, reinforcing the socially constructed nature of welfare opportunities in livestock systems.

That the interviewed farmers did not articulate their animal welfare improvement as positive welfare is a challenge not unique to this field of study. [Hampton et al. \(2020\)](#) found similar issues in conservation biology, where terms like "humane" are used inconsistently and interpreted differently across stakeholder groups. Positive welfare, as a scientific concept, may therefore encounter similar difficulties when translated into practical farming contexts.

Interviewed farmers also linked regenerative management to healthier animals, more behavioural opportunities, choice and autonomy, and better welfare towards a good life. This again suggests that participants articulated environmental stewardship, stockmanship and animal welfare as interconnected aspects of good farming, with concepts such as choice and autonomy described through everyday farming language rather than the scientific terminology of positive welfare. These suggestions indicate that regenerative grazing systems may support positive welfare opportunities, although as this study did not measure outcomes, further research should focus on investigating the synergies and trade-offs between environmental and animal welfare outcomes in regenerative farming.

These findings also support evidence from regenerative livestock systems showing that reports on human-animal relationships are based on care, compassion, and responsibility, with low-stress handling and attentive stockmanship integral to the aims of regenerative practice ([Hargreaves-Méndez et al., 2025](#)). While this relationship warrants further study, it suggests that environmental stewardship and positive welfare might often reinforce one another.

4.2 The dimensions of stockmanship: performance and tacit knowledge

The importance of stockmanship identified in this study aligns with extensive research on livestock welfare. Previous studies show that stockperson attitudes, handling practices, and human-animal relationships significantly affect welfare outcomes ([Hemsworth, 2003](#); [Munoz et al., 2019](#)). More recently, [Rault et al. \(2020b\)](#) argue that positive human-animal relationships contribute to positive welfare by promoting positive emotions, agency, trust, and resilience. Experimental studies in sheep show that gentle handling increases lambs' affinity for their stockperson and may have rewarding and calming effects ([Boivin et al., 2000](#); [Tallet et al., 2005](#)), while positive stockperson-animal interactions improve behavioural responses and reduce fear ([Boivin et al., 2003](#)).

Contemporary literature shows that stockmanship is not a single competence. It includes at least two related dimensions: (1) the performance of handling, observation, and responsive care, and (2) the tacit knowledge underpinning these actions ([Burton, 2004](#)). Our findings suggest stockmanship as a capability is multidimensional, comprising at least three interrelated dimensions, emerging from the sheep farmers' own narratives on animal health and welfare. With regard to the first dimension, farmers in this study described stockmanship not only by individual actions but also by needing to respond consistently and sensitively to subtle changes in their sheep's behaviour and demeanour. The findings also reaffirmed the second stockmanship dimension, as interviewed farmers often referred to the ability to "read" sheep, recognise subtle behavioural changes, and identify problems before they appear in clinical signs or production data. Comments like "the measurement is in me ... and if you need to know, you need to speak with the farmer" (Farmer 1) suggest participants view this knowledge as experience-based and difficult to codify in welfare protocols or assurance schemes. Similar findings were reported by [Buddle et al. \(2021\)](#), whose participants described welfare assessment as an intuitive "sense" developed through experience and close engagement with livestock.

However, this does not mean formal instruction is irrelevant. Participants valued formal knowledge, such as flock health plans, veterinary advice, and training, but saw experiential knowledge as foundational to daily welfare assessment and decision-making. Tacit and formal knowledge can complement each other, with formal knowledge providing frameworks and guidance, and experiential knowledge offering the contextual understanding needed to apply those frameworks. Similarly, [Mahon and Clark \(2026\)](#) suggest that contextualised care protocols, such as those used in lameness management, can be more effective in addressing complex animal welfare issues and driving behavioural changes than standardised, one-size-fits-all approaches.

The third dimension of stockmanship which appears to have emerged from the participants' accounts is adaptive expertise. Farmers described continually refining management through observation, experience, and reflection on flock health and welfare outcomes rather than relying solely on fixed protocols. This iterative learning allowed them to adapt management to changing needs of animals, disease challenges, and farming conditions, highlighting the dynamic nature of stockmanship.

4.3 Farmer-centred hierarchy of animal welfare improvement

This study develops a farmer-centred hierarchy of welfare improvement ([Figure 1](#)) based on participants' descriptions of how they organise animal welfare. This hierarchy emerged inductively from participants' accounts and should be viewed as an interpretive tool rather than a definitive model. Although presented as a hierarchy for interpretive purposes, participants' accounts suggested that husbandry, health, stockmanship, and positive experiences were closely interconnected and mutually reinforcing. These practices were not reported to be carried out as discrete or sequential stages of animal welfare improvement.

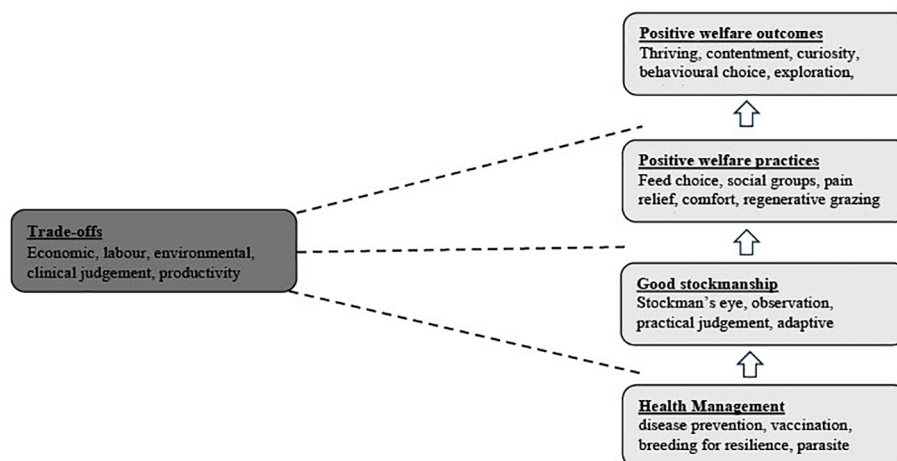


FIGURE 1

Farmer-centred conceptual pathway illustrating how positive welfare emerged from participants' accounts. The hierarchy represents an analytical interpretation derived inductively from thematic analysis. Positive welfare outcomes are shown to emerge progressively from health management, good stockmanship and positive welfare practices, while trade-offs influence decision-making at every stage. The image is intended as a conceptual representation rather than a validated welfare framework.

The hierarchy therefore represents one possible interpretation of how participating farmers described the relationships between husbandry, stockmanship and positive experiences.

The farmer-centred hierarchy also converges with [Littlewood et al. \(2026\)](#), who conceptualise care provisions as inputs intended to support welfare, while reserving animal welfare for the affective experiences that result. From this perspective, husbandry, health management and stockmanship create conditions conducive to positive welfare but are not themselves evidence that animals are experiencing positive welfare. The hierarchy developed here is farmer-centred and describes how participating farmers organise welfare improvement through everyday stockmanship and understand positive experiences as outcomes of this process. However, establishing whether these practices produce positive welfare would require direct assessment of animals' affective experiences, which could well be done in conjunction with existing theoretical and animal-centric positive welfare frameworks.

4.4 Trade-offs and the practical realities of welfare improvement

While farmers described numerous practices that could generate positive welfare outcomes, they also recognised that welfare decisions rarely occurred in isolation from economic, labour, and production considerations. This again demonstrates the importance of the farmers' holistic perspective and decision-making process in achieving positive welfare outcomes. Positive welfare was therefore not presented as something that could always be maximised but as an outcome negotiated within the practical realities of commercial sheep farming.

The findings show that farmers aim to balance competing priorities, reportedly weighing health and welfare outcomes against broader production objectives. These trade-offs did not reflect a lack of concern for welfare. Instead, they demonstrate that welfare improvement often requires balancing multiple responsibilities,

demanding practical judgement to achieve good outcomes under commercial conditions. Farmer 8's reflection, that a farmer must "put a value on that sheep's life" before calling a vet, illustrates how treatment decisions are negotiated within economic and geographic constraints. In such contexts, farmers weigh the likely effectiveness of treatment, the animal's current condition, its likelihood of recovery, and its future capacity to experience a good quality of life. These decisions are not framed as positive welfare choices in themselves, but they determine whether an animal can return to a state in which positive animal welfare, and the positive experiences that underpin it, is possible. When recovery is feasible and the animal is perceived to have value, whether productive or genetic, veterinary treatment is more likely to be pursued. When recovery is unlikely, euthanasia is considered the most humane option. This example illustrates that good stockmanship extends beyond day-to-day husbandry to encompass difficult welfare and ethical judgements as farmers balance animal welfare, resource constraints, and the practical realities of rural livestock management.

The findings in this study also echo those of [Losada-Espinosa et al. \(2020\)](#), who argued that livestock farming creates structural ambivalence, whereby stockpeople must care for animals while maintaining productive, economically viable enterprises. Rather than showing indifference to welfare, the trade-offs described here illustrate the practical and ethical judgements central to daily stockmanship. This study also reinforces evidence that welfare improvements often involve competing considerations. For example, [Hansen et al. \(2023\)](#) show that management promoting maternal bonding can also introduce challenges related to separation. Likewise, farmers in this study highlighted that achieving positive welfare is not a matter of simply adding practices, but of continually negotiating between animal welfare, economic viability, labour, and long-term management. Overall, these findings suggest that a key aspect of good stockmanship is managing competing demands while maintaining the highest standards of care possible. Positive welfare does not arise from the absence of constraints, but

from farmers' ongoing efforts to balance aspirations with the realities of commercial production.

4.5 Implications for policy and practice

For participating farmers, promoting positive welfare may be more successful when framed as part of good stockmanship rather than as a separate animal welfare agenda, or even purely from an animal-centric perspective. As discussed, positive welfare initiatives should reflect farmers' established norms and management practices to increase relevance and acceptance. As such, advisory programmes, assurance schemes, and welfare initiatives may see greater uptake if this concept is integrated into existing practices. For example, advisory programmes could be designed as facilitated peer-to-peer learning groups where farmers discuss real-world cases of welfare improvement, share experiential knowledge, and develop adaptive management strategies together. Such programmes could move beyond prescriptive checklists to support farmers in refining observation skills, interpreting behavioural cues, and building the tacit knowledge participants in this study described as foundational to good stockmanship.

Finally, stockmanship should be recognised as professional expertise. As described earlier, welfare improvement relies on observation, judgement, adaptive learning, and tacit knowledge. Policies based solely on compliance may overlook this focus on capabilities, expertise and reflective, continuous improvement. To motivate adoption, advisory approaches should integrate scientific guidance with farmer knowledge and language and, as this study found, place greater emphasis on stockpersons' skills and knowledge. Using participatory processes to combine animal-centric research evidence with the practical context, perspectives and knowledge of sheep farmers is likely to be more successful in advancing positive welfare on farm.

4.6 Limitations and future research

This study has several limitations. First, it relied on farmers' self-reported accounts of welfare improvement practices. While qualitative interviews are useful for understanding perspectives, they do not directly assess welfare outcomes or stockmanship competence. These findings should be seen as reflecting participants' views, not objective measures. As such, future research combining interviews with behavioural, physiological, and observational assessments would offer valuable insight into how farmers' understandings relate to actual animal welfare outcomes. Second, purposive and snowball sampling may have introduced selection bias, potentially overrepresenting farmers engaged with animal welfare and industry initiatives. Thus, the findings reflect the views of participating farmers, not all UK sheep farmers. Third, this study focused only on UK sheep farmers. The hierarchy developed may not apply to other livestock sectors or regions. Comparative research across species, systems, and locations is needed to determine broader applicability. Finally, some participants linked regenerative grazing with improved animal welfare through greater behavioural choice and enrichment. While this suggests regenerative systems may support positive welfare, this relationship was beyond the study's

scope. Future research should explore how regenerative practices affect animal welfare across different systems and how animal welfare and environmental sustainability can be integrated for mutually beneficial farm management.

5 Conclusion

This study explored how UK sheep farmers understand and pursue positive animal welfare and the extent to which their described practices align with contemporary scientific conceptions. The findings of this study indicate that participating sheep farmers saw positive experiences as integral to established practices of stockmanship, health management, and husbandry. The practical approaches they adopted were broadly consistent with positive welfare frameworks, but their articulation of welfare remains distinct from prevailing scientific terminology. Developing a farmer-centred hierarchy of welfare improvement provides an interpretive lens that complements existing scientific models. This hierarchy complements them by showing how positive welfare is understood and achieved in everyday practice from the farmers' point of view. Focusing and building on farmers' existing stockmanship and experiential knowledge, alongside contemporary scientific understanding, may enhance the uptake of future positive welfare initiatives and therefore advance positive welfare in practice on farm.

Data availability statement

The raw datasets for the current study may be available from the corresponding author upon reasonable request, subject to the conditions of the ethical approval and participant consent.

Ethics statement

The studies involving humans were approved by Royal Agricultural University Ethics Committee. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

MM: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing. JS: Resources, Supervision, Validation, Writing – review & editing. LM: Formal Analysis, Resources, Supervision, Validation, Writing – review & editing. IYH: Writing – review & editing, Methodology, Supervision, Formal analysis, Software.

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solely for language editing and formatting assistance. All research, analysis, and intellectual content are the original work of the author(s), who take full responsibility for the manuscript.

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