

A survey of rabbit handling methods within the UK and the Republic of Ireland

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Abstract

Rabbits are commonly kept in a variety of settings, including homes, laboratories and veterinary surgeries. Despite the popularity of keeping this prey species, little research has investigated current methods of handling. The aim of this study was to examine the experience of owners and keepers in using five handling methods commonly referred to in books written for pet owners, veterinary and/or laboratory personnel. An online survey was completed by 2,644 respondents, representing all three of these groups, and breeders. Data were acquired to determine sources used by participants to gain knowledge of different handling methods, the methods they used and for what purpose, and their perceptions of any associated difficulties or welfare concerns. Results indicated that supporting the animal's body against the person's chest was used most frequently, and considered the easiest and most welfare friendly method of the handling methods explored. 'Scruffing with rear support' was the least used method and was considered to be distressing and painful for the rabbit. As a terrestrial prey species, being picked up is likely an innately stressful experience. Additional research is encouraged to explore the experience of rabbits during handling to identify methods that can be easily used with the fewest welfare compromises.

Keywords

animal welfare, rabbit, handling, human-animal interactions, pets, veterinary, laboratory

Introduction

The domestic rabbit (*Oryctolagus cuniculus*) is one of the few species commonly kept as pets as well as being used for research and farmed for its meat and fur. After the dog and cat, the rabbit is the third most common mammalian pet in the United Kingdom, numbering between 0.8 – 1.1 million (PDSA, 2016; PFMA, 2017). They are frequently used as laboratory models; UK figures for 2015 report their use in over 14,000 experimental procedures (Home Office, 2016). The last 30 years have seen increasing research into the management and welfare of laboratory rabbits (e.g. Gunn & Morton, 1995; Lidfors, 1997; Verga *et al.*, 2007), more recently this has extended to encompass pet rabbit ownership and husbandry practices (e.g. Rooney *et al.*, 2014; Oxley *et al.*, 2015). Studies highlight the need for better understanding of the human-rabbit relationship and associated ownership practices to facilitate the production of effective and informed education for owners, laboratory and veterinary staff. The handling of rabbits is one such management area.

As a terrestrial prey species, being picked up is likely an innately stressful experience (McBride, 2017). However, handling kept rabbits is important for several reasons, including health checking for sore hocks (pododermatitis) and myiasis (blowfly strike). Yet, Mancinelli *et al.* (2014) found that 93.8% of 168 pet rabbits assessed showed signs of sore hocks (pododermatitis), suggesting owners either do not know to check the hocks or have difficulties in doing so. Whichever reason, the lack of health checks can be particularly fatal in summer months, when risk of fly strike is heightened (Bisdorff & Wall, 2006). Though handling is potentially stressful, “*it is essential that owners of pet rabbits undertake twice-daily checks of their pet and are aware of the potential risks associated with faecal clumping and urine scalding*” (Druce, 2015, p202).

Research on rabbit handling has studied effects on physiology such as mortality rate and weight gain (e.g. Jezierski & Konecka, 1996) and behaviour (e.g. McBride *et al.*, 2006; Swennes *et al.*, 2011). For example, Swennes *et al.* suggest that handling (by scruffing and supporting the hind limbs) increases compliance in laboratory procedures and decreases human-directed fear in comparison to non-handled rabbits. However, there are limitations in the body of research. Overall it is restricted to farm and laboratory rabbits whose experience of human interactions are likely very different to that of pets. Further, the term handling is used broadly, specific methods are rarely stated or clearly described, and differ between studies. Rooney *et al.* (2014) also highlighted the lack of

distinction in the literature between ‘lifting’ and ‘handling’. Lifting can be considered a specific state, when the animal’s body is in the air and not in contact with any surface. The lack of definition can be extended to include the difference between ‘handling’ and ‘restraint’. ‘Handling’ may be considered as referring to general interactions such as stroking or carrying, as opposed to ‘restraint’ which is more specific, perhaps for a designated purpose. For example, laboratories may use specific restraint methods and, in some cases, unique restraint devices (Hrapkiewicz & Medina, 2013), whilst pet owners and/or vets may refer to specific restraint methods to groom or administer medication. In summary, the effects of handling methods on rabbits remain unclear and clearer definitions and descriptions in the academic and applied literature are required. Within this study, we define handling as a generic term referring to the ‘*holding and support of a rabbit in a manner in which the rabbit can be static and does not include the picking up (from floor to holding position) or lowering of the rabbit*’. More specifically: ‘Lifting’ is defined as ‘picking the animal up from a surface/ground’, ‘Holding’ is defined as ‘supporting the animal’s weight off the ground/surface’, and ‘Restraint’ is defined as ‘restricting the animal’s movement’.

Numerous handling methods are noted within pet, laboratory and veterinary books, but there is a lack of consistency across contexts in both the terminology and when these should be used (Oxley *et al.*, 2016). Furthermore, some methods are controversial including scruffing (Figure 1,e), where no or limited support is given to the animal’s spine and legs (RWAF, 2007; House Rabbit Society, n.d; Richardson & Keeble, 2014), and tonic immobility induced manually by a handler. Tonic immobility is a reflex defence response to a perceived extreme threat, where there are no other escape options. Also known as ‘fright paralysis’ (Gallup, 1974) or the ‘death faint’ (Darwin, 1869) it is a temporary, reversible state of profound motor inhibition that causes the animal to go passive and appear dead. This reduces the interest of the predator/attacker, who may then move away providing an escape opportunity. Though most commonly reported in prey species, it is recorded and can be induced in predator species, including humans (McBride, 2015; Abrams *et al.* 2009). Although many do not recommend tonic immobility for pet rabbits (see e.g. Rabbit Welfare Association and Fund (RWAF), n.d.; McBride *et al.*, 2006; Richardson & Keeble, 2014; McBride, 2015; Oxley & Ellis, 2015), it is still recorded as being used in research, such as for the purposes of assessing fear response (see Zucca *et al.*, 2012; Trocino *et al.*, 2013).

There is a surprising dearth of information about the welfare implications of different handling methods or how they are perceived by rabbit handlers. Therefore, the aim of this research was to explore the experiences and perceptions of owners/handlers of pet, laboratory and farm rabbits in using five handling methods commonly referred to in books written for these audiences. Data was acquired of sources used by participants to learn about rabbit handling, which methods they used and for what purpose, and their perceptions of any associated difficulties or welfare concerns regarding all five methods.

Method and Materials

Questionnaire design and distribution

The customised questionnaire was piloted to ten individuals with varying rabbit experience (owners, animal care technicians and a veterinarian). The final version was approved by ethics committees at University of Southampton and Moulton College, and is available on request from the corresponding author. The questionnaire was hosted on Survey Monkey. Participants were recruited by an advert and link distributed through Social Media (Facebook and Twitter) and an advertising flyer made available at an animal related conference in the UK. Inclusion criteria, as stated in the first page of the questionnaire, were that respondents need to be 18 years old or over, live within the UK or Republic of Ireland and previously or currently work with or own rabbits. Respondents had to indicate they met these criteria. Those who did not were automatically removed from the survey. Survey data was collected between 19th October and 30th November 2015.

The questionnaire comprised 70 questions in three sections. Potentially participants would answer fewer depending on their responses.

- Section one: respondent demographics (age, gender, location);
- Section two: participant experience and perception of five illustrated rabbit handling methods (see Figure 1, a-e).

For each method, an image was displayed and a filter question asked: namely if they had used the method illustrated, and if not, why not. Respondents who had not used the method were then directed onto the next handling method image. Those that had used the method continued to answer seven further questions before progressing to the next method image:

Four questions concerned human experience: when the method was used (grooming, health check, moving, administering medication, other (open response)); how easy the participant found the method (measured on a four point scale - very easy, easy, difficult, very difficult); two open questions asked for information about any difficulties they encountered; and how they feel about using this method (enjoy, neutral, upsetting).

Three further questions investigated handler perception of the rabbit's experience of the method: if they considered the method stressful for the rabbit (measured on a five point scale from 1 = not at all stressful, 5 = very stressful); how they felt the rabbit in the picture was feeling (anxious, fearful/scared, happy, sad, relaxed, calm or other); and to describe what in the picture made them come to this conclusion. Results from these questions will be reported in a later paper (Oxley *et al* In prep)

- Section three: further information about the respondents' knowledge and experience of handling rabbits and sources used to acquire knowledge about handling methods.

At the start of the survey participants were briefed about the study aims, informed that no personal details would be gathered, and a consent statement was provided. At the end of the questionnaire a debriefing page gave details of where to obtain further information about rabbits/rabbit handling and the corresponding author's details if they wished to receive a summary of the findings.

Handling Methods

The five handling methods were chosen as they were commonly referred to in books aimed at owners, veterinary and/or laboratory personnel (see Oxley *et al.*, 2016). Books are an easily accessible source of information frequently used by pet owners (Edgar & Mullan, 2011). The methods were illustrated by

photographs in the survey (Figure 1). The same rabbit was used in each picture and photographs were displayed in black and white to avoid any possibility of colour influencing responses. No word description was provided for any of the pictures.

Analysis

After removing incomplete surveys and respondents who reported to live outside the UK and Ireland, 2,644 respondents were included in the analysis. Data was collected in Excel and coded for analysis. Descriptive statistics were reported in this study.

Results

Demographics

Table 1 displays a summary of demographic data. The majority of respondents were female (92.1%; 2,436) and aged between 21 and 49 (80.4%; 2,123), whilst 8.2% (216) were under 21 years of age and 11.1% (294) were 50 years or over. 90.3% (2,387) stated that they currently live in England. The remainder lived in Scotland (4.6%), Wales (3.7%), Northern Ireland (0.8%) and the Republic of Ireland (0.6%).

Ownership and experience

The sample represented a wide range of rabbit experience. Only 33.3% (882) had less than 5 years experience. Many respondents (38.9%, 1,028) currently, or had previously, worked with rabbits in a variety of settings. Though rescue and veterinary settings accounted for 30% of these, others included working with rabbits in zoos/petting farms, pet shops and laboratories. Most respondents currently or had owned pet or show rabbits (96.1%, 2,299), and of these, 83.2 % (2,199) stated they currently own pet rabbits. Of these, a substantial proportion owned only one rabbit (28.7%, 631), the remainder owning multiple rabbits, most commonly two animals (41.9%, 920) (see Table 1).

Handling Methods

Frequency of use

Seven respondents were excluded from this part of the dataset: five reported issues with viewing the images for method A (4) and method C (1), noted as due to technological difficulties. Two indicated they had used method E, but then provided responses suggesting the rabbits were dead at the time of handling.

Method B (86.2%, 2278) was the most commonly used across the sample. Methods A, C and D were used with similar frequency (A = 63.6%, 1,678; C = 53.7%, 1,418; D = 59.9%, 1,583) and method E noticeably less frequently (15.3%, 403).

However, when looking at frequencies within a context, some variations are noticed (see supplementary file 1). These relate specifically to those respondents with laboratory experience who reported higher use of methods A and E over all other work and ownership categories. For laboratory workers Method A was the most commonly used (86.8%), as compared to Method B being so in pet ownership and all other work contexts. Likewise, for this laboratory experience group, Method C (30.1%) was the least commonly reported, as opposed to Method E being consistently the least used method in all the other contexts.

Purpose of use

Each method was used for various purposes (Figure 2 & supplementary file 1) Across all ownership and work groups, moving the rabbit was the most commonly reported reason for handling, followed by health checks/administering medicine and grooming. A variety of ‘other’ reasons were reported, including cuddling/petting (method A 5.4%, 91 and method B 10.9%, 248), veterinary health procedures (method D 5.5%, 87) and using a particular method for picking up a ‘difficult’ rabbit or in an emergency (method E 16.1%, 65).

Across the whole sample, moving was the most frequently reported reason given for using all methods (A 59.5%, B 80.2%, C 68.3%, E 70.5%) except method D (3%). Method D was mainly used for health checking (82.2%), grooming (42.1%) and administering medicine (26.1%).

Cuddling and petting was reported infrequently as a reason and not at all for Method E.

Reason for not using each method

Participants indicated why they did not use a method by ticking any of the four suggested reasons that were applicable (Table 2). The raw scores indicate that this participant sample found Methods A and C the most unfamiliar or the most difficult to implement. Whilst concerns regarding suitability were expressed for all methods, these were substantially fewer for Methods A (360) and B (226) compared to Methods C (767), D (751) and notably, method E (1908). ‘I was told never to use this method’ was reported for all five methods, but at least seven times more frequently for Methods D (273) and E (317).

An open response box of ‘other, please specify’ provided additional data. The most frequent category emerging from these responses was “having had a negative experience, fear of the rabbit escaping or risk of injury (to person or rabbit)”.

Methods D and E appeared to generate a negative emotional response. Eleven participants had a strong emotional reaction to method D (rabbit on back), using words such as ‘wrong’, ‘cruel’, ‘dangerous’ and ‘dreadful’. Even more (80) used language indicating a significant negative reaction to method E (scruffing) using the words ‘cruel’, ‘distressing’, ‘distasteful’, ‘horrible’, ‘painful’ and ‘un-caring’.

Sources used to learn about rabbit handling

The most frequently reported sources were books (40.2%), veterinary practices (40.0%), friends/family (37.4%) and specialist internet sites (rabbit forums). The least frequently used included breeders (8.7%), own experience (5.2%) and large animal charities information sites, such as the RSPCA or other rescue centres (0.1% and 0.9% respectively). For further detail, see supplementary file 2.

Discussion

The aim of this study was to investigate the experience of owners and keepers in using five rabbit handling methods commonly referred to in books written for pet owners, veterinary and/or laboratory personnel. A customised questionnaire survey provided data concerning the reasons why the different methods are or

are not used, by whom, and what sources are used to learn about rabbit handling. A large response rate was achieved, representing individuals across the United Kingdom and the Republic of Ireland. Participants were owners and those working in a range of rabbit related work contexts.

It is clear that rabbits are handled in a variety of ways for different reasons, which may vary across contexts (e.g. pet versus laboratory). Although previous studies indicate handling can be a negative experience for rabbits and should be avoided (Schepers *et al.*, 2009; Rooney *et al.*, 2014; Bradbury & Dickens, 2016), the wide range of reasons reported in this study suggests there is a need to handle them, predominately for moving them and for conducting health checks. It is encouraging to note that the majority of respondents recorded handling for health checking and many for grooming procedures, both being activities which may have positive long term health and welfare benefits for the rabbits, through enabling health concerns to be identified early. Likewise, there is some indication that participants recognise that, as prey animals, rabbits may find handling aversive (McBride, 2017). Few respondents described cuddling or petting as reasons for handling rabbits. This may reflect a recruitment bias, the survey attracting people already interested in and knowledgeable about rabbit ethology and welfare. This is further supported as only 28.7% of current pet owners kept singleton rabbits compared to 52% in the PDSA (2016) survey conducted 6 months after the present study. Similarly, in Australia, Howell *et al.*, (2015) stated that 63% of respondents surveyed owned only one rabbit.

Rabbit handling is a complex issue. The literature evidences conflicting views with regards to suitability of methods (Bradbury & Dickens, 2016). The current study confirms that this disparity is reflected in the perceptions of a large sample of people handling rabbits in different contexts. Rich data from open responses regarding why particular methods are not used suggests handlers consider the rabbit's experience, both emotional and to avoid potential injuries, and the perceived preferences of the individual rabbit (Table 2). Methods were also described as ill-suited to the breed of rabbit. Rabbit breeds vary dramatically in size; from miniature breeds e.g. Polish at 1.1kg, to giant breeds, e.g. Continental Giants at 7kg (British Rabbit Council, 2016). Whilst medium and larger breeds are common to the laboratory and farm contexts, a range of different sizes are kept as pets (Rooney *et al.*, 2014). To the authors' knowledge, there is no research investigating handling and breed differences. For example, larger animals may find some methods less supportive and more anxiety inducing, and

smaller breeds may be more susceptible to pain when handled. Future research might explore rabbit preference for different handling methods and determine if there are breed differences. This could enable the promotion of methods that encourage safe handling and reduce negative welfare impacts.

Handling methods used

For all methods, except D, moving was the most frequently reported reason for handling a rabbit, even amongst pet owners. This may reflect increasing public understanding that rabbits generally find being handled a mildly aversive experience that can lead to struggling / aggressive responses (Rooney et al., 2014). However, there was disparity across the handling methods and the different groups concerning familiarity with, perceived suitability of and frequency of use. These differences may reflect the range of information sources and knowledge quality available to owners of rabbits, as with other species (Roshier and McBride, 2012).

Method A was the least familiar to the respondents, particularly pet owners, though it was the preferred method used by laboratory staff for moving rabbits (see supplementary file 1). Method B is conceptually somewhat similar to Method A (animal held and supported close to body), and was the method most frequently used by pet owners. It is interesting to note that respondents recognised the difference in the full body support provided by Methods A and B, compared to the subtly different Method C where the rabbit is held away from the person's body. Method C was far less frequently used, and considered by substantially more respondents to be unsuitable (see Table 2).

Method D, placing a rabbit on its back, was used by very few respondents and then usually for health checks, grooming and administering medication. Research has indicated that placing a rabbit on its back can induce a state of tonic immobility which is stressful (Klemm, 1971; Carli *et al.*, 1979; McBride *et al.*, 2006). This method is not recommended for general use, exceptions being for specific purposes such as administering medication or clipping nails (Everitt, 2014). A large proportion of respondents regarded it an unsuitable handling method, with 71% considering it would result in a negative experience for a rabbit.

Although the image for method D did not show a rabbit completely on its back, it could have been viewed this way by some respondents and some may be aware that full inversion onto the back is not required to induce tonic immobility (McBride, 2015).

Method E, scruffing with rear support, was the least used method and more commonly reported by those working in laboratories and breeding establishments.

Scruffing is a contraversial method, due to a perceived fear response in rabbits whilst being handled this way (Bradbury & Dickens, 2016) and the British Rabbit Council (n.d.) and Rabbit Welfare Associations and Fund (2007) advise against its use. Conversely, Swennes *et al.* (2011) reported that habituating rabbits to this scruffing method over three weeks resulted in more compliant behaviour, which they interpreted as a reduced fear response. However, this interpretation is challenged as it is based on several unsubstantiated assumptions. The evaluation procedure comprised a novel handler approaching the cage and offering fresh food before the rabbit was “*scruffed, corralled and removed from its cage*” (p43) to another room. It was then stroked between its eyes and its central ear artery held to simulate blood collection. Part of the evaluation was to look for a flinch response to the initial touch at stroking. Evaluation was a five point compliance-resistance score measuring each rabbit’s response to being scruffed and transported to and from the home cage, and in respect to its overall behaviour. There is no information provided of the animal’s general prior experiences of human approach and feeding which may block learning of less frequent approaches associated with scruffing (Kamin 1969). More importantly, the suggestion that ‘compliance’ equates with ‘reduced fear’ does not account for any effect of learnt helplessness (Maier & Seligman, 1976), tonic immobility (McBride, 2015) or stress induced analgesia (Butler & Finn, 2009) and behavioural inhibition due to increased vigilance (McBride, 2017; 2017a).

Further research is needed to understand if scruffing represents an actual welfare issue for rabbits or if it is simply perceived as a negative experience by the majority of rabbit handlers and why this may be. Future research investigating the aversiveness of different handling methods must control for breed (size) differences, prior experiences of the individual rabbits used and consider other challenges such as the confidence and/or experience of handlers, which may influence how rabbits respond to and experience handling (Mullan & Main, 2007).

Purposeful engendering of appetitive classical and operant associations to potentially fear inducing human interactions through training is promoted by many including McBride (2000, 2017) and Crowell-Davis (2007) for rabbits and other small prey species (Hurst & West, 2010). As for other species, early experiences are fundamental to later emotional resilience and behaviour. Appropriate exposure of rabbit kits to handling during pre-weaning sensitive developmental (socialisation) periods both before (Csatadi, Kustos, Eiben, Bilkó, and Altbäcker, 2005; Pongrácz & Altbäcker, 1999) and after eye-opening, between days 10 and 20 postpartum (Der Weduwen & McBride, 1999) can have profound beneficial consequences on responses to people in later life. In order to prevent the mother cannibalising or abandoning the young, early handling is best done after their eyes open, around day 10. Scent profiles should be preserved by rubbing hands with the nest material before touching the young, and also stroking the mother (Magnus & McBride, In Press).

Many of the reasons reported for handling may be accomplished in other ways. For example, using positive reinforcement to train rabbits to enter a carry-cage, and interacting with rabbits at floor level, rather than cuddling them while lifted and held (Bradbury & Dickens, 2016). Updating information sources and education campaigns to highlight alternatives should be directed at all groups of rabbit handlers.

Sources used to learn about rabbit handling

Edgar and Mullan (2007) found prospective rabbit owners reported leaflets, pet shop staff and books as the most commonly used sources for acquiring knowledge about rabbits. In the present study, books, veterinarians, friends/family and online sources were used with comparable frequency. This difference may simply reflect a general increase over the last decade in using electronic media for information gathering and its increasing availability on portable devices such as smartphones. Regardless of the media, the quality of information available may vary across sources.

Method B (against chest) is frequently described as an appropriate rabbit handling method in books aimed at pet owners and veterinary staff (Oxley *et al.*, 2016) and was also the most commonly used method reported in this study. This suggests that the information provided via different media is reflected in real world practices when it comes to rabbit handling methods.

Conclusions

In conclusion, it is evident from this study that a variety of methods are used to handle rabbits for common husbandry activities and these can differ within different settings. Although only five handling methods were explored, and alternatives methods also are likely to be used, this study sheds some light on the reasons why people handle rabbits and the concerns they may have about different methods.

Handling of rabbits is likely to have a direct impact on rabbit welfare. Negative impacts on rabbits can be minimised by handling them in an appropriate way, including avoiding methods that have a high potential to impede welfare, such as Tonic Immobility and scruffing. Additional research is encouraged to explore the experience of rabbits during handling and to identify the methods that may make handling easier for the handler and reduce any perceived and actual negative experience for the rabbit.

Future research that identifies preferable rabbit handling methods should ensure that the findings are disseminated in a way that will reach rabbit handlers (pet owners and those in work settings). Whilst books and veterinary practices are frequently used sources, information needs to be consistent and available across a wide range of media if it is to significantly influence the handling methods used, and thus the welfare of rabbits.

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Figure 1. Common handling methods: a) under arm, b) against chest with hand on back, c) in front of/against chest with hands/fingers separating front legs and supporting chest, d) placed on back, e) scruffing with rear support (Photographs taken by C.F.E. (author 2)).

Note: *only* the image was provided on the questionnaire.

A)



B)



C)



D)



E)



Figure 2. Reasons reported for using each of the five handling methods.

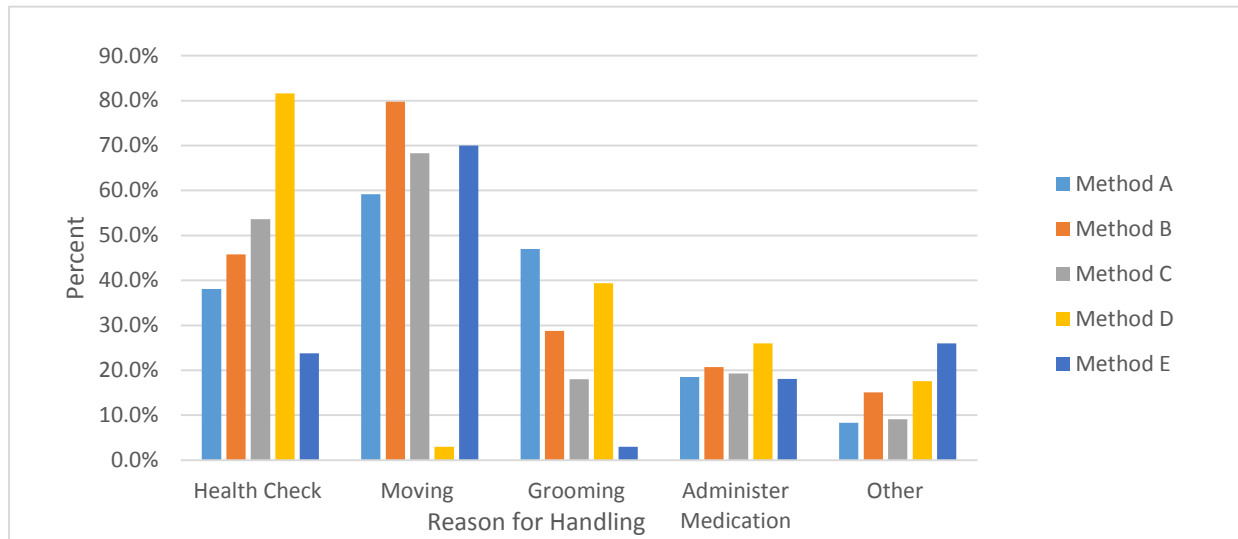


Table 1. Frequency counts and percentages for demographic and ownership/experience data (*more than one option could be given).

Question (*multiple responses possible)	Answer	n	%
In which country do you live now?	England	2387	90.3
	Scotland	122	4.6
	Wales	98	3.7
	Northern Ireland	20	0.8
	Republic of Ireland	17	0.6
What is your age?	18 – 20	216	8.2
	21 - 29	975	36.9
	30 – 39	689	26.1
	40 – 49	459	17.4
	50 – 59	246	9.3
	60 and over	48	1.8
	Prefer not to say	11	0.4
Do currently you have pet rabbits of your own?	Yes	2199	83.2
	No	445	16.8
If yes, how many pet rabbits do you <u>currently</u> own?	1	631	28.7
	2	920	41.9
	3	205	9.3
	4	172	7.8
	5	62	2.8
	6	50	2.3
	7	25	1.1
	More than 7	132	6.0
Do you, or have you, owned pet or show rabbits?	No	345	13.0
	Pet rabbits	2195	83.0
	Both pet and show rabbits	94	3.6
	Show rabbits	10	0.4
Do you, or have you, worked with rabbits?*	No	1616	61.1
	Rescue centre	440	16.6

	Veterinary practice	349	13.2
	Pet shop	194	7.3
	Zoo/petting	145	5.4
	Laboratory	83	3.1
	Rabbit breeder	49	1.9
	Education/teaching	50	1.9
	Boarding	41	1.5
	RSPCA Inspector/Animal Collection Officer	3	0.1
	Groomers	2	0.07
	Reiki/AAT	2	0.07
	Work at Rabbit shows	1	0.03
	Meat Farm	1	0.03
Approximately how many years' experience do you have with rabbits?	Less than a year	114	4.3
	1 - 2 years	297	11.2
	3 - 4 years	471	17.8
	5 - 10 years	844	31.9
	11 - 19 years	499	18.9
	20 or more years	419	15.8

Table 2 – Reasons given by respondents who did *not* use a method (more than one reason could be given).

(Number of respondents)	Method A (962)	Method B (366)	Method C (1225)	Method D (1061)	Method E (2239)
Not familiar with this method	423 (44.0%)	53 (14.5%)	317 (25.9%)	114 (10.7%)	153 (6.8%)
I find this method difficult	133 (13.8%)	59 (16.2%)	169 (13.8%)	81 (7.6%)	92 (4.1%)
I do not feel this method is suitable	360 (37.4%)	226 (61.7%)	767 (62.6%)	751 (70.8%)	1908 (85.2%)
I was told never to use this method	29 (3.0%)	16 (4.4%)	39 (3.2%)	273 (25.7%)	317 (14.2%)
Other:	134 (13.9%)	42 (11.5%)	92 (7.5%)	122 (11.5%)	241 (10.8%)
<i>Negative experience/risk of injury or escape (owner or rabbit)</i>	46 (4.5%)	15 (4.1%)	34 (2.8%)	71 (6.7%)	87 (3.9%)
<i>Personal preference/methods not suited to breed/size/context</i>	21 (2.2%)	7 (1.9%)	21 (1.7%)	18 (1.7%)	67 (3.0%)
<i>Variation of method used or needed</i>	27 (2.8%)	8 (2.1%)	19 (1.5%)	1 (0.1%)	2 (0.9%)
<i>Not secure</i>	5 (0.5%)	1 (0.3%)	7 (0.6%)	8 (0.7%)	4 (0.2%)
<i>I never handle my rabbits</i>	12 (1.3%)	3 (0.8%)	2 (0.2%)	2 (0.2%)	0
<i>Strong emotional reaction to method</i>	1 (0.1%)	1 (0.3%)	0	11 (1.0%)	80 (3.6%)
<i>Rabbit's preference for this position</i>	0	2 (0.5%)	6 (0.5%)	9 (0.9%)	1 (0.04%)
<i>rabbit does not allow any handling</i>	22 (2.3%)	5 (1.4%)	15 (1.2%)	2 (0.2%)	0

Table 3. Sources where respondents learnt to handle rabbits (more than one source could be given).

Source	%	n
Books		
Book/s	40.2%	1064
Formal ‘professional’ face to face		
Veterinary Practice	40.0%	1057
Pet shop	16.1%	427
Friend/Family	37.4%	988
Work colleague	12.6%	333
Completed a course	10.6%	281
Breeder	8.7%	231
Rabbit show	3.5%	93
Rescue Centre	0.9%	23
Volunteering	0.08%	2
School	0.04%	1
Internet media		
Rabbit forums (online)	32.7%	865
Specialist rabbit internet sites	23.3%	616
YouTube videos	0.4	10
“Online Advice”	0.2%	6
Rabbit organisation/Course		
Rabbit Welfare Association and Fund	28.3%	749
British Rabbit Council	5.6%	147
Institute of Animal Technology	2.6%	70

Laboratory Animal Science Association	0.9%	25
RSPCA/BlueCross/Rabbit Rights for Scotland	0.1	3
Self-taught/Own experience		
Own experience/self-taught/trial and error/"had rabbits a child"	5.2%	137
"Common Sense"/ "Instinct"	0.5%	12
"What feels comfortable"/"comes naturally"	0.2%	6
Can't remember/not stated	0.2%	6

Supplementary File 1. – The five rabbit handling methods were used for a variety of reasons and within different pet ownership and work contexts. More than one reason could be given.

		Owned	Work Categories								
		Owned companion rabbits (pet and show) (2299)	Vet practice (349)	Rescue centre (440)	Boarding establishment (41)	Pet store (194)	Zoo / petting farm (145)	Lab (83)	Breeding establishment (49)	Education /teaching (50)	Other (9)
	Method A	1468 (63.9%)	281 (80.5%)	316 (71.8%)	26 (63.4%)	141 (72.7%)	121 (83.5%)	72 (86.8%)	36 (73.5%)	44 (88%)	9 (100%)
Method A (1678)	Moving (999; 59.5%)	863	205	208	18	90	55	70	24	30	6
	Health Check (645; 38.4%)	555	98	143	11	62	49	25	13	25	3
	Grooming (793; 47.3%)	711	111	154	13	74	44	14	14	20	4
	Administer Medication (311, 18.5%)	261	59	58	5	27	20	17	8	17	1
	Other (225; 13.4%)	194	32	39	5	17	12	6	2	2	1
	Method B	2005 (87.2%)	286 (92%)	389(88.4%)	38 (92.7%)	174 (89.7%)	125 (86.2%)	52 (62.7%)	43 (87.8%)	42 (84%)	6 (66.6%)
Method B (2278)	Moving (1827; 80.2%)	1628	236	328	33	138	103	40	39	34	5
	Health Check (1049; 46.1%)	922	114	199	18	108	65	23	18	25	1

	Grooming (662; 29.1%)	593	52	107	8	53	41	7	6	16	2
	Administer Medication (478; 21.0%)	420	56	99	10	56	24	5	6	13	0
	Other (309; 13.6%)	276	43	42	5	19	18	12	4	9	1
	Method C	186 (8.1%)	204 (58.5%)	254 (57.7%)	26 (63.4%)	114 (58.8%)	86 (59.3%)	25 (30.1%)	32 (65.3%)	28 (56%)	6 (66.6%)
Method C (1418)	Moving (976; 68.3%)	870	138	172	14	70	72	20	20	21	5
	Health Check (761; 53.7%)	680	103	146	22	63	40	14	21	19	3
	Grooming (276; 19.5%)	246	26	50	9	22	16	2	6	5	1
	Administer Medication (272; 19.2%)	248	49	60	11	28	20	5	11	8	1
	Other (85; 6.0%)	79	22	18	1	12	4	3	2	2	0
	Method D	1369 (59.5%)	271 (77.7%)	292(66.4%)	24 (58.3%)	145 (74.7%)	104 (71.7%)	59 (71.1%)	39 (79.6%)	38 (76%)	7 (77.8%)
Method D (1583)	Moving (48; 3.0%)	42	11	6	0	6	4	0	1	0	1
	Health Check (1301; 82.2%)	1132	233	246	20	128	90	48	33	31	4
	Grooming (666; 42.1%)	593	122	128	8	62	45	15	24	15	4
	Administer Medication (413; 26.1%)	369	81	91	6	36	33	12	14	12	4
	Other (199; 12.6%)	162	50	39	4	33	13	14	4	10	1

	Method E	325 (14.13%)	92 (26.40%)	94 (21.40%)	3 (7.3%)	31 (16%)	44 (30.3%)	64 (77.1%)	24 (49%)	20 (40%)	3 (33.3%)
Method E (403)	Moving (284; 70.5%)	221	64	58	3	18	29	59	15	14	2
	Health Check (96; 23.8%)	76	22	22	0	5	10	19	6	7	0
	Grooming (11; 2.7%)	10	0	3	0	0	1	1	0	9	0
	Administer Medication (73; 18.1%)	56	21	17	1	5	12	9	3	9	0
	Other (97; 24.1%)	85	25	33	0	10	9	7	7	4	1
Other open responses:											
Method A - 225 (Cuddling / petting 91; Calming / security 58; Rabbit's choice/pref. 46; Holding 17; vet / lab procedure other than health checking 6; habituating / taming 4; and picking up 3.)											
Method B – 309 (Cuddling / petting 248; Calming / security 9; Rabbit's choice/pref. 4; Holding 29; vet / lab procedure other than health checking 5 ; habituating / taming 3; and picking up 2; Transition to another position 7; restraining 1; teaching handling 1.)											
Method C – 85 (Picking up 44; Cuddling / petting 9; Rabbit's choice/pref. 1; Holding 6; vet / lab procedure other than health checking 5; Transition to another position 6; restraining 2; teaching handling 2; placing down 11; sexing 2.)											
Method D – 199 (Cuddling / petting 25 ; Calming / security 6; Rabbit's choice/pref. 2; Holding 1; vet /health / lab procedure other than health checking 87; restraining 3; teaching handling 1; sexing 71; judging 2; bathing 1)											
Method E – 97 (vet /health / lab procedure other than health checking 3 ; picking up 9; teaching handling 1; Difficult to pick up (aggressive, nervous , difficult position) 65; Transition to another position 2; emergency situation 17)											
Places of work											
Other included: 2 RSPCA inspectors, 2 groomers, 1 reiki therapist, 1 AAT, 1 work at Rabbit shows, 1 animal collection officer and 1 meat farm.											

