

'I think it will eventually be done away with': Attitudes among healthcare professionals towards the current system of animal experimentation

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“I think it will eventually be done away with”: results from three focus groups investigating attitudes among fifty-two health care professionals towards the current system of animal experimentation

Abstract

This paper describes a study of attitudes to the current system of animal experimentation (for the production of health interventions) among 52 UK health care professionals (HCPs). These HCPs participated in three separate focus groups (of 18, 17 and 17 participants), and were invited to respond to the question “what is your opinion about the current system of animal testing?”. The study focused specifically on their views of the current system (rather than their views of animal testing in general). The HCPs were critical of the current system, particularly with regard to regulation, secrecy, validity, unnecessary suffering and welfare.

Keywords

Animal experimentation, health care professionals, attitudes

Introduction

Millions of animals are bred and used every year for the purpose of animal experimentation (Home Office, 2013). These include beagle dogs, mice and primates (the last of which are also captured from the wild) (SCHER, 2009:8). In Europe roughly 40% of these animals are used to test consumer products, while the remainder are used in health research (European Union, 2010). By any standards, the tests on these animals are usually painful, and almost always result in the death of the creature involved. In the UK (and elsewhere) such animals are exempt from animal welfare legislation applied to others of their species (e.g. Animal Welfare Act 2006).

Most evidence concerning attitudes to animal research has been collected in MORI polls of the general public (Ipsos MORI, 2012). In 2012, MORI found that 37% of the public were "objectors" to animal testing, and such polls suggest that in general the number of people opposed to animal experimentation is rising (Ipsos MORI, 2006, 2010). In society generally animal experimentation is a contentious topic (Hunnicut, 2013, Haugen, 2006) but in spite of the fervour of the debate, medical research in peer reviewed journals concerning attitudes of health professionals is remarkably scant. In conducting an extensive search (appendix 1) I could find only one such study (of medical students who reported reservations about the practice, Glick, 1995).

While few studies of health professionals exist, psychological studies (predominantly of psychology undergraduates) are much more common (e.g. Ormandy and Schuppli, 2014, Swami et al, 2008, Serpell, 2004, Furnham et al, 2003, Hagelin et al, 2003). A search of the Psychinfo database produced 5 such studies (appendix 1). One study (Ormandy and Schuppli 2014) critiqued the "deficit" model (which argues that the public may oppose animal research because they have insufficient knowledge to understand its benefits). The deficit model however has been discredited (because as the public becomes more expert in how animal research actually works, their opposition to it grows (Ormandy and Schuppli, 2014). Opposition to animal research is also linked to the respondent's demographic position. Younger people are more likely to oppose the practice than older people, and women oppose vivisection significantly more than men (Ormandy and Schuppli, 2014, Hagelin et al, 2003, Furnham et al, 2003, Serpell, 2004 and Swami et al, 2008). This may be because men take a more "dominionistic" attitude towards their environment while women take a more "moralistic" stance (Kellert, 1980, cited in Ormandy and Schuppli, 2014).

A concept known as "belief in animal mind" is also an indicator of opposition to animal experimentation (Swami et al, 2008). This concept denotes a belief that animals are "self-aware" and can experience emotions such as fear, sadness, happiness and pleasure (as well as physical pain). "Beliefs about the mental experience of animals are related to attitudes about animal testing" (Swami et al, 2008:269) and those who acknowledge "animal mind" are much more likely to oppose animal research (Furnham et al, 2003). Images of animals which illustrate "animal thinking" (e.g. where animals show love and self sacrifice or display altruistic behaviour) therefore abound on social media sites. Social media thus appears to have an effect on attitudes to animal testing (with pro-animal rights groups having a high facebook membership).

Regardless of opposition to animal research, this method of testing consumer products and drugs is increasing (Home Office, 2013). Pharmaceutical companies wishing to introduce a new drug onto the market must by law test that drug on a rodent and non-rodent species (Animals (Scientific Procedures) Act 1986). Current UK legislation permits such companies to conduct these tests in secret. Under this provision (even where the researcher consents) disclosing information concerning the experiments can lead to a lengthy prison sentence (Widdicombe, 2014). Such secrecy also makes it difficult to assess whether the Home Office is genuinely implementing alternatives to animal research (Widdicombe, 2014). The secrecy clause is currently under review (Home Office, 2014) but even if repealed, current proposals appear to accommodate "gagging clauses" possibly preventing violations of animal welfare coming to light (Widdicombe, 2014).

A key tenet of existing animal research welfare legislation is the “3Rs” (Animals (Scientific Procedures) Act 1986). This stands for “replacement” (with alternatives where possible), “refinement” (to minimise suffering and improve welfare), and “reduction” (of the number of animals used). Animal rights groups however (BUAV, 2011) suggest that the 3Rs remain unenforced (Taylor, 2010), inspection of facilities is pre-arranged, and Home Office licenses are granted on the basis of the experimenter’s own evaluation of suffering to benefits (Animal Aid, 2006).

Animal rights groups have adopted a variety of methods by which to oppose animal experimentation (Animal Aid, 2006), most of which constitute legal and peaceful protest (The Economist, 2011). However at the far end of the antivivisectionist spectrum, some activists have adopted more extreme measures. For example, in December 2012 a permanent injunction was granted at the UK high court (Peachey, 2014) against extreme animal rights activists campaigning to shut down Huntingdon Life Sciences (a facility in Cambridge alleged to conduct particularly cruel experiments, Broughton, 2001). In January 2014 these activists received prison sentences (Press Association, 2014). Such events are part of the recent context in which current attitudes to animal experimentation (in the UK) can be placed. However given the extreme activities of the animal rights groups concerned, these events may have been expected to reduce public sympathy for antivivisection. Current evidence nevertheless suggests that public opposition to animal experimentation in the UK is rising (Ipsos MORI, 2006, 2010).

This paper assesses nurse’s attitudes to the current system of animal testing. These professionals spend the most “hands on” time with patients (DOH, 2012) so it is important to assess such attitudes among this group. Such professionals might be expected to hold

“information rich” opinions concerning how medications are developed. In addition nurse prescribing has expanded in recent years (Royal College Nursing, 2012) and nurses might thus be expected to take a keen professional interest in the development of the drugs they prescribe.

Fifty two HCPs gave their opinions in 3 separate focus groups (with 18 HCPs in the first group and 17 in the remaining two). The study concentrated on animal research for health interventions only. Experimentation to produce consumer goods was not investigated (though some brief discussion of this practice emerged and was strongly condemned by all HCPs present).

Methods

The fifty-two health professionals enrolled in the study were level 3 students on the “top up” B.Sc. Professional Practice and B.Sc. Public Health Studies degrees at Coventry University. Each HCP was completing a two year part-time degree programme which offered professionals with a diploma an opportunity to complete to honours degree level. No doctors were enrolled on the programme (but past alumni had “fast tracked” onto medical degrees). Ethical approval for the study was granted by the university research ethics committee.

All HCPs were completing an advanced module in research methods as part of their degree. The current study was conducted after the last but one session of this module. Information was gathered from 3 recent module cohorts containing 52 health professionals in total. The cohort date was recorded but is withheld to conceal participants' identities (and pseudonyms were assigned for the same reason). All cohorts were roughly the same size and undertook the research module at some point between 2011-2014.

Qualitative data was gathered through focus groups (together with quantitative data described elsewhere, Dignon, 2014). In addition, the study recorded the age, sex, years of work experience, grade, and employer of each HCP. The focus groups occurred after the scheduled 3 hour seminar on ethics (presented as a normal part of the research module curriculum). This session included a discussion of animal testing (with a 40 minute lecture giving an "unbiased" overview). Two weeks earlier, the students had been directed to "read up" on animal experimentation and were referred to a list of resources presenting both sides of the argument (appendix 2). At this point the study was described and verbal consent elicited. The lecturer (a non-clinical research scientist) identified her own standpoint (one of opposition to the current system) which was presented as an example of "reflexivity" (whereby researchers are honest about their bias and invite their work to be critiqued in this light, Gerrish and Lacey, 2013:425). The lecturer strongly emphasised however that views that were different to hers would be actively sought in the study for reasons of balance.

On the day of the study, HCPs were invited to remain for 60 minutes at the end of the scheduled session to participate in the investigation. Health professionals who did not wish to participate were allowed to leave - however all but two health professionals (in all groups) chose to participate. Participant information and consent leaflets were distributed. The study was again described, right to withdraw emphasised and written informed consent obtained. Quantitative data (Dignon, 2014) including age, sex, years of work experience, grade, and employer were collected from each HCP, and for the remaining 45 minutes a focus group (facilitated by an independent researcher not otherwise involved with the HCPs) was held. Focus groups are considered to be a highly useful method of eliciting health related information (Crossley, 2003), as they allow health professionals to "spark off" each other,

prompting information and generating ideas (Wilkinson, 1998). In these focus groups the health professionals were invited to offer their opinions on animal experimentation, in answer to the prompt “what is your opinion about the current system of animal testing?”. The study purposely avoided asking if participants were opposed to all forms of animal testing, concentrating instead on the workings of the current system.

The focus groups were recorded using a digital voice recorder. Transcripts were made of these recordings and thematic analysis (Sullivan, 2003, Jowett et al., 2012, Gooden and Winefield, 2007) was performed. Transcripts were read and re-read to extract important themes. This was a time of reflection for the researcher where text was sifted and appraised until eventually the key issues emerged (labelled using the words of the HCPs themselves). These themes are presented on page 6 and included concerns regarding welfare, secrecy and regulation.

Results

The healthcare professionals had an average age of 38 (range 25-59; SD 8.7) and an average length of health care experience of 12 years (range 2-35; SD 8.73) (see table 1). Ten were male and 42 were female. All were comparatively senior nurses from various branches and specialisms including cardiovascular, acute and critical care, long term conditions, palliative care, paramedic nursing, midwifery and mental health. All had educational qualifications to at least higher education diploma level.

Table 1 INSERT HERE

Themes

From the opinions voiced by the HCPs in the focus groups, the following ten themes were identified:

No regulation

Secrecy

Repetition leading to unnecessary suffering

Awareness

Welfare

Sanctions

Profit motive

Ethics

Outmoded science - the need for alternatives

Focussing on humans with the disease rather than animals

Links between themes were apparent. For example “no regulation” (and “secrecy”), were linked to “welfare” and “repetition leading to suffering” which in turn were linked to “ethics”, “sanctions” and the “profit motive”. These links occurred as follows: carrying out the work in secret (with, in effect, no regulation) increased repetition (along with the animal’s suffering) and compromised their welfare. This was related to the theme of ethics because carrying out research in this way was unethical and meant that sanctions were needed (against “corner cutting” to increase profits).

The final two themes that were linked were firstly “outmoded science- the need for alternatives” and secondly “focussing on humans with the disease rather than animals”. The first of these themes (“need for alternatives”) appeared to prompt HCPs to discuss the

possibility of focussing on humans, especially those with terminal illnesses. This would give such patients an opportunity to test potentially life-saving drugs at the earliest possible stage.

Themes and the testimony on which they were based

No regulation. The first issue which the HCPs identified as problematic was the issue of regulation. Several HCPs suggested that such regulation appeared at best to be weak and at worst absent. During one focus group the following dialogue occurred:

Nigel: It's just that it's not regulated enough the way that they test isn't proper or they haven't got the proper standards in place or they have but they are not used.

Roger: It seems as though the issue is around the monitoring... it seems it's not monitored enough. It's such a big industry you'd think with all the money it's made you'd think it would be possible for the government to become more involved ...to properly oversee the testing ...because it doesn't seem to be monitored well enough.

Anya: They need to make sure it's all..regulated properly. You know everyone is doing it to the same standard...but it looks like some labs will do it well but others won't. I think you need standardisation ..you have to follow this and if you don't these are the consequences.

Secrecy. A further issue which appeared to trouble the health professionals was the fact that the testing facilities were allowed to carry out the experimentation in secret.

Steve: I think a lot of their testing is done in secret. I wonder how well is it policed.

Elsbeth: But anything done in secret is a bad idea isn't it. It should be open and then everything should be able to be justified. Why does it have to be in secret? If everything was being done in an ethical manner then it shouldn't have to be secretive.

Steve: This is why it's done in secret and animals rights activists can't see it. Because obviously the experimenters don't want to be exposed and to have to enforce the regulations. They want to be able to test the animals anyway they like. Because it's obviously going to cost more to do it properly and the more the cost the less profit they make. Probably that's why they're doing it in secret.

Angharad: I just think that we are starting to ask questions and I think these laboratories should start opening the door so we could just see what's going on and look at the research and see what they actually do to those animals.

Gail: These laboratories - the places where they test the animals - I mean there's never any cameras in there.

Karina: They're not transparent are they?

Ilsa: It obviously sounds like there's something dodgy going on. Well get the cameras in and I'm sure we would all be absolutely horrified.

Repetition leading to unnecessary suffering. The health professionals were also concerned about the unnecessary suffering due to repetition (where outcomes had already been established in previous trials). These were some of their remarks:

Neville: We shouldn't unnecessarily put so many animals to the test. And the level of suffering should come down because they are living things like us. So if we have feelings for people and for patients we should also have feelings for animals.

Angelique: Some of them [the experiments] are not necessary. The drugs may already have been proven.

Angharad: Well it says it has to be tested on a rodent and a non-rodent species. Why 2 animals? What does that add?

Delilah: Surely as compassionate human beings we are able to recognise the level of distress in an animal and terminate the testing at the point where the animal is starting to struggle. I mean we can do it with ourselves. Human beings are being tested and in order to participate the testing is so rigorous that no human being is going to be put at risk. Why shouldn't we do that with animals?

Awareness. Many of the health professionals reported a lack of awareness of the way in which the system of animal experimentation functioned. Anita for example explained that “we as a culture are unaware of what is going on”, a remark with which Mairead, Grace, Irene, Elsie, Marianna, Elspeth, Doreen, Jean, Anita and Delilah all agreed. Marianna noted that in other areas of animal welfare (e.g. fox hunting) there was an (understandable) public

outcry. But the public was unaware that “that is nowhere near the thousands and thousands of animals that are poisoned, tested on and tortured in God knows what circumstances over a long period of time” as part of the system of animal experimentation. Delilah and Anita echoed this sentiment:

Delilah: I think as healthcare professionals we’re not really as aware as we should be about the extent of the animal testing and I know..that I wasn't even though I've done non-medical prescribing. I wasn't aware of the extent of the suffering of many of the animals. So I think that we have a responsibility really to take more of an interest and to go out there and find out what's going on and to sort of advocate really for these animals, and make other professionals aware.

Anita: I agree that most professionals aren’t aware of this but I do think we can make our voices heard and we can register what we think. I think it will eventually be done away with... or at least it will be done away with to the maximum possible. There will be a burden of proof on people if they want to use animal experimentation to *really* show that there is no alternative but we might bring that a bit closer by making our views known.

Welfare. HCPs were especially concerned about the welfare of the animals. Elspeth explained:

I know that a lot of people when they’re buying food they make the decision that if the animals are treated correctly whilst alive that's a price to pay. And you know I feel like that about drugs. If it was between my son and a dog it would be my son every

time. But that dog should be treated correctly whilst it's being tested on. It should be comforted and there should be properly enforced rules to protect its rights. It's morally disgusting that they're not given bedding, comfort and exercise. A lot of people feel very strongly...about the welfare of the animals - a lot more people feel that way these days than there used to be.

Ilsa: I think if we knew that they were being treated properly and they were being looked after we'd feel a bit better.

Phoebe: Yeah and like they weren't killing them. They were just testing to see what the outcomes were.

Rita: As a nurse who works in cardiology who is often asked to find patients to take part in trials to test drugs I'm just wondering if the people who actually took part in these drug trials knew how the drug had been tested on animals it might affect their idea of actually taking part.

In particular HCPs were concerned that such animals were exempt from the Animal Welfare Act.

Anita: I've only just realised that they didn't have any rights to welfare in the same way as other animals. I mean that shocked me that that they don't really have any rights. That your neighbour neglecting a dog down the street..can have the dog taken off him but these labs can do anything and it's disgraceful.

Gail: An animal that hasn't done anything. It's just been born. Just born to die.

Mavis: It's really horrible.

Sanctions. In addition the health professionals identified that meaningful sanctions should be imposed when welfare violations occurred.

Nigel: One thing that was mentioned ..is what the punishments are. Whether there are sufficient deterrents.

Steve: Ordinary people - that woman who pushed that cat into a wheelie bin she got fined for that and there's other people - people who been cruel to animals have been fined quite heavily or they can't have animals for a certain number of years. But that's one rule for one person and another rule for another and it's really just double standards throughout.

Nigel: The less punishment there is for breaking regulations the longer it will continue. I used to work in an industry where it was cheaper to take a fine rather than do something about the problem. Because this area needs a true deterrent to hit their profits and make it more expensive to not look after the animals than it would be to look after them properly.

Profit motive. The HCPs were conscious of the profit motive underpinning the research. They felt that because the drugs were being developed by large pharmaceutical companies,

where profit was the priority, things were done as quickly and cheaply as possible to the detriment of the animals.

Anabelle: Maybe if they made it harder for them to make a profit. You know maybe they should have to really prove they meet certain rules and regulations before they can use the animal and before they can breed and sell them. Maybe if it was harder for people to make a profit from animals in that type of market then this would help matters.

Doreen: At the end of the day it's all about money isn't it?

Ethics. The HCPs were clearly aware of the ethical issues associated with animal experimentation.

Angharad : You wouldn't do it to human being so what gives them the right to be able to do it to animals. It's just not right. It's not it's not justified in any way. I know we've got to find a way to do it and, well I'm not an activist or anything like that but I love animals and when you really do truly think about it it's really wrong.

Peter: It's the law that makes them test them.. That needs looking at. The law needs to change first.

Georgette: If it's medical research that is going to produce a longer life then okay fair enough - but shouldn't we be treating the animals as little heroes just like guide dogs

or police dogs. That's their job at the end of the day. We've given them occupations and we just need to have a little bit more respect for them and a bit more appreciation.

Anabelle: Yes we should treat them in every way imaginable as better even than the average animal. Of course we should treat all animals beautifully but in this context we should be leaving nothing to chance - give them exercise, give them the best life imaginable – if they're going to save our lives at the end of the day.

Steve: I mean look at the cost of actually looking after them. It costs nothing to actually let them have a bed, a cushion and a blanket. It would cost them nothing to give the dog a run to exercise in. It's minimal. It's a drop in the ocean really isn't it?

Georgette: The drug companies have all that money so what is it to them if they spend a bit more on letting them be like normal dogs instead of restraining them and seeing them suffer and giving them a compromised diet and sawdust for their bedding - it's just horrible.

The HCPs felt that those involved in the process of animal experimentation attempted to justify what they were doing. Lana suggested that this “was because the people doing the research have more of a stakehold in the outcome of the research”, while Georgette remarked:

The researchers say that these animals are going to find us these miracle cures and so on and improve our lives so much and that has a different sort of resonance when compared to say killing animals for meat. Yes we can give them some welfare

standards, but after all [the researchers say] they are in the service of producing cures for humankind. The process of them participating in that and the outcome of it is so important that its almost that their welfare is secondary, even though there is absolutely no reason whatsoever why this should be so. In fact it invalidates the process - the fact that their welfare is not safeguarded because the animals are then so compromised in all sorts of ways before they even get the drug and that may be why the drug doesn't work.

Outmoded science - the need for alternatives. Further testimony was supplied in relation to the perception of the availability of alternatives and the level of rigour present in the science of animal experimentation. The following dialogue centred around this issue:

Anya: Shouldn't they be looking at alternative ways of testing as opposed to testing on animals. Like we said earlier there are better things now. Everything is always evolving isn't it so do we still have to test on animals? Can't we use alternatives?

Jocasta: When I heard about the drugs and what they do to get them I thought well it's just absolutely not necessary. There are other ways.

Mairead: But as much as I am an animal lover (I've got two dogs and I'd never let anybody hurt my dogs) but if my child needed drugs and the only way that drug was going to save her life was by testing it on animals, well maybe you have to do that. I'm sort of a bit torn really.

Phoebe: But then they test them on dogs. We're nothing like dogs.

Gail: I'd rather get them tested on human than a dog.

Scarlet: I would too. I mean I wonder whether or not you might be putting the child in more danger. Maybe you're going to get more unreliable results through the dog testing. Not always perhaps but maybe more often than not.

HCPs also felt that the outcome of the testing could be influenced by the stress placed on the animal. Angelique for example, suggested that the animal would be compromised (due to being deprived of exercise and kept in a confined environment) and this could affect its response to the drug and distort results. This position was supported by other HCPs.

Georgette: It's not natural for an animal to be kept in a 2 by 2 cage, and given no exercise. Maybe this is why the animal expires and it's got nothing to do with the drug.

Jean: Yes there's research now about pressure ulcers. If people aren't stressed and if they're emotionally happy their pressure ulcers heal quicker and they found that in the brain cells in people with a cardiac condition that there is an emotional response which affects the heart. So you know there is so much in it which is psychological and emotional and this will influence the drug's effects. It's probably the same for animals.

The type of animals tested on was also discussed. Elspeth for example explained how the loving responses of all animals, including rodents could contribute to human well-being (Lander and Graham-Pole, 2008):

I mean my stepson had pet rats and they are loving sweet creatures and just because they gave us the plague we think they're disgusting and dirty things. But you can actually have them as pets- they have the most loving responses just the same as my pet dog does. And they can make you feel wonderful. They're all personalities they're all individuals because they express joy and fear just the same as us. It doesn't matter what species it is.

Georgette: It's as if we think different species have different rights and we all think like that. A dog has extra rights, a primate has extra rights again. It's almost understandable because primates are much much closer to us than a rodent is but on another level it you know they're all suffering and if suffering is involved it has to be as minimal as it can be.

Focussing on humans with the disease rather than animals. Several HCPs identified the possibility of testing drugs by focussing on humans with the disease rather than animals.

Delilah: I think personally that people should be able to volunteer and what we expect animals to do we should be prepared to do ourselves really, to put ourselves forward. I think some people would as long as there's more rigorous testing. I think some

people may be more accessible to some of this early testing. I think I would. What does anyone else think. Would you volunteer yourselves?

Anya: People could argue though that if they hadn't done all this animal testing we wouldn't be where we are today with advances in cancer research and things like that. But I think a lot of people with chronic illnesses there are no cures for would be happy to participate in trials for new treatments because they've tried everything else. I used to work on rheumatology so I know there were lots of new meds coming out that they were trying on patients that had tried everything. Their illness wasn't getting any better. Then they tried these new meds and they're improving. The symptoms are improving and their life expectancy has improved. So I know if they did trials for these drugs people would willingly volunteer - you'd have like a willing cohort already I suppose wouldn't you?

Karina: Haven't they been pretested on animals?

Anya: But that's what I'm saying do we have to have that bit. That's the question isn't it.

Gail: But what you've got to ask yourself really is would you put something in your mouth that hadn't been tested just to see if it worked?

Anya: Exactly but then if I know I had an illness and I knew that I wasn't going to get any better and I've tried everything. There might be that one percent chance that if I have this new medication that is all singing all dancing that hadn't been tested on

anything else I think I would say yeah I would. I've got nothing to lose.

Karina: But when you've got something terminal you live for every day. I don't know if you'd actually risk it.

Anya: But I think yeah I would...I think you'll always get a minority of people that will put themselves forward because they've got nothing else to lose. They know that their end is coming whether it's tomorrow or whether it's six months down the line. I think personally I would say yes.

Genevieve: I would as well.

Karina: You'd like the choice anyway.

Grace: Definitely.

Mairad: Yes you'd like the chance.

Some HCPs suggested that patients with incurable diseases may want the chance to try any new medicine that might potentially help them. Given the choice, patients would seek such drugs before their own demise (rather than wait for the results from animal experiments, when it may be too late). In the view of these HCPs, informing such patients and enabling them to make a choice for themselves might be a more reliable approach to the testing of some drugs.

Discussion

Several HCPs appeared to have strong views on the need for much better regulation of laboratories and breeding facilities. Where surplus animals were bred, the breeding facility should underwrite the care and rehoming of such animals, and legal statutes should be in place to require this. In the view of these HCPs, facilities which euthanised large numbers should be subjected to criminal proceedings (leading to meaningful financial (and other) penalties). The breeders and testers should also ensure that their facilities could house the animals in exemplary accommodation given the contribution these creatures would later make to human health.

Several HCPs queried animal research on the basis of "conflicts of interest", given that the pharmaceutical companies commissioning the research were profit making concerns (needing to get their products to market before their competitors). One HCP suggested that such facilities might benefit financially from cutting corners both in research procedure and animal welfare. Animal welfare issues were clearly of central concern to the HCPs. Basic welfare needs, they suggested, seemed to be disregarded. They could not understand how the provision of comfortable accommodation and exercise, within and before the experiment, could confound the results. Regardless of potential external "contaminants" it seemed nonsensical that regular outdoor exercise, for dogs for example, would introduce sufficient variation to invalidate the research.

The HCPs were senior nurses (most at band 6 or above) and had been sponsored by their trusts to "top up" their professional qualifications. As part of their degree, all had been given extensive tuition in research methods in health. Their understanding of research (and of

health care) was significantly higher than that of a "normal" layperson (Brody et al., 2011). Even so they reported a lack of awareness about the way in which pharmaceuticals were tested on animals. This was coupled with a belief that if their fellow professionals were to become more aware then opposition to the system would be greater.

HCPs seemed to be aware however that some testing facilities would have worse standards than others. The most enlightened would have the best facilities and would rehome (rather than euthanise) dogs who were no longer useful to the laboratory. HCPs were nevertheless concerned that such best practice was rare. In this context they were alarmed that animal experimentation was conducted in secret and such secrecy was sanctioned by law (Animals (Scientific Procedures) Act, 1986). The HCPs questioned how the research could be subjected to external scrutiny when it was conducted "behind closed doors".

The involvement of animals in research may have led to the discovery of important therapies, some HCPs suggested, but this made them all the more shocked at the manner in which the animals were treated. They wondered why dogs who were contributing so much to the welfare of human kind were given only sawdust for bedding, refused exercise and confined to cages. These animals should be given the best life possible outside of the experiment and rehomed where feasible at the end of the research.

While some HCPs believed that animal experimentation had contributed to human health others were not so sure. As one of them said "It's very hit and miss, isn't it?". It seemed equally likely to this HCP that using animals may have delayed or even prevented the introduction of life saving drugs (Greek and Greek, 2000). In her view, little evidence was available to establish exactly which tests were effective and which were not (Heywood,

1990). Another HCP queried the extremity of the tests believing that equally valid results could be obtained by halting the tests at an earlier stage when the animal was starting to struggle.

In this context the protocol used in animal research was questioned. Specifically the HCPs queried the evidence base on which much animal research was conducted. Nowadays all health professionals are required to engage in evidence based practice, where care must be underpinned by findings generated by the most rigorous research (Sackett et al., 2000, Straus et al., 2011). To these HCPs it was remarkable that in such an era, the initial stages of drug development (using animals) centred on procedures and findings where the evidence base was so weak (Perel et al., 2007, Hackam and Redelmeier, 2006). HCPs referred to the “tick-box” nature of animal experimentation. It occurred for procedural rather than scientific reasons. This was viewed as conducting research as a ritual, “because we have always done it like that” rather than because such research genuinely contributed to human health.

Given that the participants were almost all nurses it is not surprising that such a group of professionals would display high levels of compassion (both towards patients and towards animals). Some studies have stressed the link between empathy and unfavourable attitudes to animal experimentation (Serpell, 2004, Furnham et al, 2003) and such findings have a resonance in the current study. It is also noteworthy that 81% of the sample were women and (as was mentioned previously) almost every study in this area (Furnham et al, 2003, Hagelin et al, 2003, Swami et al, 2008) has emphasised that women are far more likely than men to oppose animal testing.

It is however important to address the limitations of the current study. Researchers have

indicated that it may be difficult to draw definitive conclusions from studies of attitudes to animal research because "some survey questions require experience that many people do not possess" (Hagelin et al 2003:76). The current study however was an investigation among health professionals who had been educated in research methods and had gained significant knowledge concerning how the system of animal experimentation operates. As such, lack of knowledge about animal experimentation caused few limitations in the current study. A more serious limitation was that the HCPs were enrolled on a research methods module and were being taught and assessed by the principal investigator (and may have preferred to give the answers they believed she wanted to hear). Such bias however is present (though possibly to a lesser degree) in all research (where the "authority" status of the investigator can influence responses, Bowling, 2014). In addition this source of error cannot fully explain the overwhelming opposition to animal experimentation observed in the study. The author would contend that the opposition observed is a genuine reflection of the real views of participants.

A further limitation was that participants were enrolled between 2011-2014, a period during which important events related to animal research in the UK were unfolding. For example extreme animal rights activists in 2012 (Press Association 2014) were sentenced and imprisoned during this period. Media coverage of these events however was generally unsympathetic (to the activists concerned) and it might be argued that such coverage may have reduced opposition to vivisection rather than enhancing it. The HCPs in this study nevertheless were clearly opposed to the current system. A more significant limitation was that the principal investigator clearly stated her own opposition to the functioning of the current system. This may have influenced responses and results from the study should be read in this light. It is unlikely however that such error can fully explain the overwhelming opposition to the current system of animal testing that was recorded.

Conclusion

Health care professionals (particularly nurses) are a section of the public with one of the greatest stakeholds in the development of new life saving drugs and therapies. Such professionals might have been expected to have had a heightened commitment to the use of any type of research method which would lead to new therapies and advances in care. Nurses, who make up most HCPs in the NHS (DOH, 2012) (and comprised all HCPs in this study) are the professional group that spend the most “hands on” time with patients (including patients in the final stages of their lives). It is highly noteworthy that these professionals should have expressed such concern about the failures of animal testing. The compassion that such professionals displayed towards their patients appeared to extend to compassion for animals also. In this study, HCPs were opposed to the current system of animal experimentation.

Declaration of Conflicting Interests

None

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Appendix 1: Search Strategy

Databases searched: MEDLINE, CINAHL, PubMed

Keywords entered: Animal testing, Animal experimentation, Attitudes, Health Professionals

Inclusion Criteria: In the English language, published post 1990

Number of papers retrieved: 1

Glick, S.M. (1995) Animals for teaching purposes: medical students' attitude, *Medical Education*, 29,1, 39-42.

Database searched: Psychinfo

Keywords entered: Animal testing, Animal experimentation, Attitudes, Psychology

Inclusion Criteria: In the English language, published post 2003

Number of papers retrieved: 5

Furnham, A, McManus, C, Scott, D (2003) Personality, empathy and attitudes to animal welfare. *Anthozoos* 16 (2):135-146.

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Appendix 2: Resources HCPs were instructed to access in the two weeks prior to the study

Time spent on activity: 5 hours

Resources used:

In favour of animal testing

1. Understanding Animal research website
www.understandinganimalresearch.org.uk
2. Report: Understanding Animal Research (2011), "Where do medicines come from?" London: UAR.
From: www.understandinganimalresearch.org.uk/media-library/download/document/4/

Against animal testing

1. British Union of Antivivisection website
www.buav.org
2. Report: Animal Aid (2006), "Unhappy Anniversary: Twenty years of the Animals (Scientific Procedures) Act 1986", Tonbridge: Animal Aid.
From: www.animalaid.org.uk/images/pdf/unhappy.pdf

Neutral

1. Haugen, D.M. (2006) Animal Experimentation (Opposing Viewpoints), Farmington Hills, MI: Greenhaven.
2. Home Office webpage (updated March 2014) "Guidance - Research and Testing using Animals".
From: <https://www.gov.ac.uk/research-and-testing-using-animals>
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From: <http://www.legislation.gov.uk/ukpga/1986/14/contents>
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From: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265691/Animals_Scientific_Procedures_Act_1986.pdf
6. Animal Welfare Act 2006 (section 58). London: HMSO.
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Table 1

Age		Gender		Years Experience	
Over 55	2	Male	10	Less than 5	3
45-54	11	Female	42	5-9	22
40-44	6	Total	52	10-19	17
30-39	24			20 and over	10
25-29	10			Total	52
Total	52				

Band		Employer	
Band 8	4	NHS	48
Band 7	5	Military	3
Band 6	26	Other	1
Band 5	17	Total	52
Below Band 5	0		
Total	52		