

Chapter- 3

Experimentation on Non-Human Beings: Ethical Concerns

3.1. Introduction

At various stages of the history of human civilization, the practice of using non-human animals in biomedical research was quite prevalent. There is no doubt that most of the achievements in the biomedical field have become possible because of the successful experimentation on animals. It has been practiced since the time of the Ancient Greeks and possibly even before. Nevertheless, the technological development of the last centuries in the field of medical, biological and pharmaceutical sciences has been anchored on the use of animals in research. As a result, from the 19th Century, experimentation has begun to be officially regulated through legislations. It is noteworthy here that after the passing of the *Cruelty to Animal Act, 1876* in the U.K., there has been a frequently antagonistic debate between the proponents and opponents of animal research. This debate has provided a lesson as well as an impulse for new assessment in medical research. A number of influential contributors have made this debate interesting. Even though they do not agree on many issues, there is a growing consensus among the ethicists and philosophers about the need for bringing some fundamental changes.

Since the central nervous systems of humans and other animals are almost similar, in most of the biomedical researches animals provide substitute models for humans. However, the question is -- can we or should we treat animals in the way we want them to be for our experimentation purpose? In this regard the fundamental

question that comes before us is—whether and to what extent animals deserve our moral treatment in the discourse of biomedical research?

In this chapter, my aim is to analyze the arguments for and against experimentation on animals, keeping in mind the fact that the involvement of non-human animals is inevitable for today's biomedical research and progress. I begin by proposing that experimentation on animals involves certain crucial moral issues. They are- right to life, inflicting unnecessary pain, denial of subjectivity, and ownership. These issues are crucial for any moral philosophical discussion because each one of them violates certain basic values that go against humanity. In this chapter, I shall first discuss the history of animal experimentation, second, I talk about the importance and significance of animal experimentation, third, I take up four major ethical issues or concerns for critical evaluation of the subject. Apart from these three major parts, the chapter also incorporates another section where the issue of addressing the above-mentioned moral concerns has been justified. Here I talk about four such ways and means through which we could think about the ethical treatment of animals in biomedical research.

3.2. History of animal experimentation

Non-human animals have been playing a central role in the biomedical research throughout human history. Almost for 2700 years, non-human animals have been used in basic and applied research. Today's biomedical enhancement has been possible because of the use of animals in experimentation by different civilizations. However, during the last few centuries, because of tremendous technological development, the number of animals used in biomedical research has increased extensively. Consequently, the ethical aspects of experimentations on animals have

become issues that are more serious these days. To discuss these issues more realistically we should have a clear understanding of both the historical and contemporary aspects of ethical developments in this context.

Prominent physicians of the ancient period are- Alcmaeon of Croton (6th -5th century BCE), Aristotle, Diocles, Praxagoras (6th century BCE), Erasistratus and Herophilus (4th- 3rd century BCE).¹ All of them had a great influence on Galen who was a creative Roman physician of Greek civilization.² They were very well aware of the biological similarities between human and other animals. They all believed in a strict hierarchy, where human beings were allowed to use and dominate over other animals as they wished. They used animals for different forms of dissection and vivisection. They all believed that animals are there for our human purposes and they can be used for all our daily activities including experimentations. Speaking on Aristotle's position, Guerrini has said that,

Aristotle believed that only humans had intelligence and therefore rational souls; animal souls possessed emotion but not reason. Humans and animals therefore did not occupy the same moral plane. Because animals were not rational being and were incapable of deliberate choice, he concluded that there is no such thing as justice or injustice towards animals.³

Similarly, the view of Galen is also relevant here, he believed that all living beings have *physis*, or life but none of them has *psyche*, or consciousness which humans have. Humans possess both these qualities and thus they have the capacity to reason.⁴ The implication of their views is that use of animals for any biomedical research raises no moral concerns since they are not rational beings. For them, only human beings are rational beings.

The view of human domination over other animals has been replicated later in the Judeo-Christian perspective of human domination over all nature. It is represented by the texts of Augustine of Hippo and Thomas Aquinas.⁵ But interestingly there was little motivation to pursue scientific advancement of medical knowledge during their time. Medical knowledge became dogmatic then. People were more concerned with eternal life than with worldly life. They returned to Pre-Hippocratic beliefs in supernatural causes for disease and in the healing power of faith and superstition. Nevertheless, animal experiments reemerged vibrantly during the period of the Renaissance.⁶ This period witnessed the reappearance of vivisection as a heuristic method for understanding of animal physiology.

The scientific progress of the seventeenth century (the age of enlightenment) was also remarkable in this context. During this period the description of Rene Descartes on non-human animals as insensitive automata⁷ that could not feel pain, was heavily criticized by many of his contemporaries. Commenting on Descartes' position on animals, Murphy writes-

Animals had functions but they had no consciousness. For example, machines can emit sounds but they do not hear them; machines move but they do not know that they are moving.⁸

By this analogy, Descartes shows that animals were alive but did not have the capacity to feel. A dog might yelp if kicked, but it does not feel the pain any more than a radio winces when playing harsh music. Thus for Descartes, animals are equivalent to biological machines. However many have criticized this view of Descartes. Immanuel Kant was one among them who vehemently criticized Cartesian mechanistic view. According to Kant,⁹ animals are not as insensitive automata as

Descartes thinks. They are also sentient beings like humans. But Kant was also quite conservative so far as the question of our moral concern and caring is concerned. He was not ready to give any intrinsic status to animals. Like Descartes, he also thought that animals do not have any unique moral status like humans. But contrary to Descartes, Kant thinks that animals deserve our moral attention because any display of bad behaviors toward them reveal nothing but the cruel dimensions of our human character. If an individual does not hesitate to do harm to a dog then he or she also naturally would be having much difficulty in treating other fellow human beings likewise.

However, slowly from the mid eighteenth century this anthropocentric approach of human domination over animals began to be increasingly challenged by philosophers. Jean-Jacque Rousseau (1712-1778), Jeremy Bentham (1748-1832) and Arthur Schopenhauer (1788-1860) were the prominent figures to challenge it.¹⁰ Their views were more considerate toward animals. They unhesitatingly declared that animals as sentient beings. Some of them even went ahead and argued that animals have inherent worth like human beings. Thus, when we look at the works of these philosophers we get to see that there is a gradual shift from an anthropocentric justification to a more non-anthropocentric or animal-centric justification. Such approaches also started talking about our obligations and duties towards animals. But despite all these concerns and sensitiveness, the issue of human benefit remained an acceptable norm. Thus for scientists, it is still kept on using animals for their scientific investigation in the form of vivisection and dissection.

Fortunately, from the beginning of the 19th century, medicine and the study of medicine had gone through a major revolution.¹¹ Up to this period, most medical practice was mainly based on unproven traditions and beliefs and that most of the

therapies were not only ineffective but also often worsened the patients' condition. But, from the 19th century the structure of medical practice changed dramatically with the construction of hospitals, training institutes etc. The first half of nineteenth century set the grounds for establishment of the *Academie Royale de Medicine*. The breakthrough of this period was the complete realization of the investigators that only properly controlled and rigorously conducted animal experiments could provide reliable information on physiology and pathology of medical relevance. Marshall Hall (1790-1857), a distinguished physician and physiologist, supporting the research on animals stated unhappily that every experiment was attended by pain and sufferings because involved subjects were sentient beings.¹² Perhaps he felt the need for some guiding principle to regulate research involving sentient beings and as a result, he pronounced the five principles to stimulate debate in scientific community. They were: a) the lack of alternative; b) a clear objective; c) the avoidance of repetition of work; d) the need to minimize suffering; and e) full and detailed publication of the results. The second half of the nineteenth century was also significant since it was the beginning of systematic research on animal having medically relevant import. In this period, the opposition to vivisection was becoming a more widespread idea in Europe, especially in Britain. Consequently, the first legislation in the world to regulate research on animals was formulated in Britain, by the name, the *1876 Cruelty to Animals Act*.¹³

The beginning of the twentieth century was also a landmark in the medical history.¹⁴ During this period, the conflicts between the importance and the validity of scientifically sound medical knowledge through experimentation on animals and the group of antivivisection societies' protest against experiments on live animals were reaching the apex level. Accordingly, in the second half of the twentieth century, the

study of animal welfare and animal behavior became increasingly established as a scientific discipline. And from the 1970 s onwards, ethical issues raised by research on animals received increasing attention in academic discussion. A number of influential contributors (such as Peter Singer and Tom Regan) made this debate lively. The twentieth- century medical achievements were in fact recognizable. These achievements saved millions of lives- human and non-human animals. Furthermore, such achievements allowed countless humans and animals to live a life worth living by the relief of pain and suffering.

3.3. Importance of animal experimentation

That animal experimentation is an inalienable part for the development of biomedical sciences is a fact that has hardly any contenders. So far, we have seen throughout the human history how animals were or are still used for understanding and analyzing the functions of human body. But one must be clearer why exactly do we actually need animals for researches. This section is devoted to understand of the issue.

3.3.1. Why experimentation?

To learn about the causes and treatment of diseases, and to discover the better treatments and test their safety, experimentation on human and nonhuman beings is essential. However, since the late 19th century, animal experimentation has become a major tool for biomedical science. Now-a-days there is virtually no human disease- either physical or mental that has not been investigated from the use of non-human animals. Most of the latest developments in medical sciences, such as antibiotics, insulin, vaccines for polio and cervical cancer, organ transplantation, HIV treatments, would not have been possible without the experimentations on animals.¹⁵ But one must here pause and ask some fundamental questions: given that we have made so

much progress do we really now need this? If at all we think we need this, how do we justify this? While the first question's answer is an obvious 'yes', the second question deserves our more intense analysis.

3.3.2. Value of research on animals

The biological similarities of humans with the other species have been encouraging the physicians to use animals in an extensive manner. Similarities pertain to the fact that we have practically the same set of genes. Their bodies respond to diseases and treatments as much as ours do. It is inspiring to note here that the powerful new drugs, such as Avastin (for bowel, breast and lung cancer) and Herceptin (for breast cancer) have been developed after research on mice. The quality and efficacy of the pharmaceutical products are based on experiments involving animals. According to the Indian Council of Medical Research Report (May 2000), no new drug could be introduced in clinical practice or even for the matters of clinical research unless it passes the battery of toxicity tests on animals.¹⁶

As discussed in the Report (2005) of Nuffield Council on Bioethics, there are various areas of study where animals have been used as research subjects.¹⁷ Some of these areas are: basic biological research, study of human diseases, research in pharmaceutical industry, and toxicity study. An analysis of these areas will help us to understand the benefits of animals' involvement in experimentation.

Basic biological research is one of the most important areas where several types of animals are used. Such experiments are performed to further scientific knowledge without an obvious benefit. Examples of basic research are the discovery of DNA and neurotransmitters. Though initially they did not have immediate effect, both now help in cancer treatment and act as antidepressants and anti-seizure

medications respectively. The basic research also helps us to gather knowledge about how animals develop and function at the behavioral, physiological, cellular and molecular levels. For the advancement of medical science, such knowledge is very much essential. Most of the major developments in medicine and surgery have been based on fundamental understanding of biological premises, which require basic biological research. Moreover, it also helps to understand the genetic mechanisms of many species. Behavioral studies, physiological studies, genetic studies are some of the crucial areas of basic biological research. All these areas provide knowledge about the biological systems and their functioning. Such knowledge is the foundation on which the future discoveries of treatment for human as well as animal diseases are based.

The study of human diseases is another core area of biomedical sciences. Most of the diseases are complex nowadays. It involves dynamic interactions between molecular and cellular systems, which influence the development of the process of diseases. To develop a better method of treatment of a particular disease, knowledge of both the causes and the mechanisms by which the disease develops is essential. Etiology and pathogenesis are the two important areas of medical science, which study the causes and the mechanism of diseases respectively. In both the areas, research on living animals is considered highly commendable. It can give the most effective results about the complex interactions between molecules, cells and organs that occur in processes of diseases. The discovery of the 'hepatitis C' virus and the study of polio and the development of 'polio vaccines' are the landmark achievements of animals' use in the study of human diseases.

The pharmaceutical industry is another important area where the highest numbers of animals have been used as research subjects in U.K. To this day, the use

of animals in research is essential for all pharmaceutical companies in the process of discovery, development and production of new pharmaceutical products. It is also the legal requirement that new products need to be tested on animals before they are used by human beings. In U.S.A., Food and Drug Administration (FDA) is responsible for ensuring the safety, effectiveness, and quality of pharmaceutical products. In order to ensure the FDA's requirement for safety and effectiveness, pharmaceutical companies in 'preclinical' laboratory experiments have used thousands of rats, mice, rabbits, dogs and primates.

Toxicity studies constitute another important area where animals have been used as models. Its aim is to assess the degree to which substances are toxic for humans, animals or the environment. In addition, it is conducted to investigate the mechanism of toxic chemicals, or to develop or improve tests for specific types of chemically induced effects. It has to be noted here that by 1980 the number of animals used in cosmetic testing was reduced due to the development of many alternative safety tests. Still there are some products, like sunscreens, antidandruff shampoos, which cannot be proved safe without the use of on animals'. The reason is that these products contain ingredients, which may cause a chemical change in the body. These products are potentially harmful for human beings; it would not be possible to ensure that these are safe for use, without the safety test on animals.

Research on animals has also helped to develop many surgical procedures. For example, organ transplantation, open-heart surgery and many other common procedures have been developed by using animal models. Moreover, research on animals is essential in developing many life-saving surgical procedures also. Heart valve replacement is now a common procedure, which would not have been possible without research on animals. Similarly, the technique of sewing blood vessels

together has developed through surgeries on dogs and cats. It is the essential requirement for organ transplants and coronary artery bypasses. Alexis Carrel developed this technique, for which he got a Nobel Prize in 1912. Thus, it becomes clear restriction of experiments with animals would prevent the discoveries that would benefit humankind.

3.3.3. Contemporary research

Research on laboratory animals has also led to the understanding of organ rejection as well as how to overcome it. Recent discovery that a genetically modified 'purple tomato' can fight cancer in mice really turns our attention to the value of research on animals.¹⁸ It might work for humans also. Some people however claim that it is unnecessary to use animals as research subjects. They argued that computers or other non-animal models could be used instead. Undoubtedly, it is true in some cases. Scientists are striving to use computer models and other non-animal methods whenever possible. Nevertheless, there are many complex interactions that occur between molecules, cells, tissues, organs, organisms and the environment. Even the most sophisticated computer models cannot answer such interactions. Therefore, at present it is impossible to advance biomedical science without the use of animal subjects for some aspects of research.

Thus, the use of animals in biomedical research is a scientific necessity. It is an essential part of the pathway to biomedical progress. The research community has affirmed the absolute privilege to use animals as they saw fit. However, the opposition has claimed that the invasive research on animals is equivalent to Nazi behavior.¹⁹ Therefore, there is an urgent need to focus on the middle ground that will satisfy the scientific necessity as well as ethical requirement. For some recent

philosophers, there is no sufficient morally relevant difference between human life and animal life to justify the claim that only human life deserves extensive moral protection. According to Robert Nozick, it needs to justify the involvement of animals on a rational philosophical basis that takes account of their interests and suffering and not merely their utility to human species. The reasons that forbid certain forms of research on humans are also sufficient to prohibit research on animals.²⁰

However, the critics would like to say that from these discoveries it does not necessarily follow that experimentation on animals is essential for biomedical progress. Stressing the point David DeGrazia once said “You gave me a ride to the subway doesn’t mean I needed the ride to get there; perhaps I could have walked or taken a bus.”²¹ The essence of this view suggests that experiment on animals is not the only way to achieve the biomedical progress. Without the research on animals, biomedical progress might be possible. Another important critical point is that non-human animals are used as model subjects in most biomedical research for the benefit of humans due to biological and psychological similarities between human and non-human animals. Yet most of the time there is a possibility that animal models can be misleading with severe consequences. Hugh LaFollette and Niall Shanks have rightly pointed out that “reliance on misleading animals’ models delayed the development of an effective polio vaccine for many years.”²² Thus, the issue of justification of involvement of animals in biomedical research is not a simple one. It is much deeper, as R. G Frey has mentioned, than simply the defense of inflicting harm to non-human animals in biomedical research. Frey has evaluated the common characteristics of human beings, such as cognitive character, genetic origin, moral community membership and social and religious traditions. It can be assumed that these characteristics are lacking in non-human animals for which they are being deprived

from ethical protections like human beings. However, Frey has argued that these common characteristics have failed to protect the human beings also.²³ So, in order to develop a reasonable set up regarding the justification of animal involvement in experimentation, a comparative analysis of the biomedical progress that has resulted from experimentations on animals, and the progress that might have resulted from the non-animal models, would be imperative.

3.4. Moral issues concerning animal experimentation

The most important advances in the 20th century medical sciences became possible because of the involvement of nonhuman animals. It is doubtful whether we could have achieved this if animals were not available for experimentations. But many now tend to suggest that there could be alternative ways of gaining and doing researches by using certain alternative models.

For many ethicists the scientific necessity is not the only ground to justify the act of doing research on non-human animals. The benefits resulted from animal's experimentations are only *possible* and *hoped for*, whereas the harms to the subjects involved are immediate and certain.²⁴ Throughout history, there are many examples of experiments that have harmed animals without achieving any benefits. Therefore, the ethicists claim that moral implications must need to be considered before enrolling the non-human animals in experimentations. They believe that taking care of the ethical concerns would ensure the dignity of their life as well as protect them from abuse. Some of the crucial ethical concerns are raised by ethicists in connection with the justification of experimentations on non-human animals are discussed below.

3.4.1. **Inflicting unnecessary pain and harm**

As sentient beings, non-human animals have the capacity to feel pleasure and pain. This vital characteristic assures the interest of non-human animals. An inanimate being does not have interest because it cannot suffer. Thus, the capacity for suffering is the pre-requisite necessary and sufficient criterion for having interest of a being. This capacity is not like the other capacities that human beings have. Jeremy Bentham has advocated this view. According to him, the capacity for suffering can give a being 'the right to equal considerations'. As Bentham has mentioned that --

The day may come when the non-human part of the animal creation will acquire the rights that never could have been withheld from them except by the hand of tyranny. The French have already discovered that the blackness of the skin is no reason why a human being should be abandoned without redress to the whims of a tormentor. Perhaps it will some day be recognised that the number of legs, the hairiness of the skin, or the possession of a tail, are equally insufficient reasons for abandoning to the same fate a creature that can feel? What else could be used to draw the line? Is it the faculty of reason or the possession of language? But a full-grown horse or dog is incomparably more rational and conversable than an infant of a day, or a week, or even a month old. Even if that were not so, what difference would that make? The question is not Can they reason? or Can they talk? but Can they suffer?²⁵

But how do we know that non-human animals suffer? It is to be noted here that the basic signals that are used to convey pain and many other emotional states are not specific. It is assumed that a child is feeling pain through her body gestures. Similarly, it can be assured that non-human animals can suffer. However, in all cases it cannot be measured in any which way. For example, if a man knows that he is going to be imprisoned shortly, then obviously the man starts suffering. Nevertheless, in the case

of animals such kind of suffering does not come until it is imprisoned. Thus, except some exceptional cases, non-human animals as sentient beings have suffered more or less like human beings. As Singer has said

There are no good reasons, scientific or philosophical, for denying that animals feel pain. If we do not doubt that other human feel pain we should not doubt that other animals do so too.²⁶

Is there any moral justification for the view that animal's pain is less important than human beings' pain? We can answer with simple assertion that 'pain is pain'. So it is meaningless to say that someone's pain is less or more important than that of the others. It is a common belief that it is worse to slap a man than an elephant. It does not mean that animal's pain is less important. It means the capacity to bear is different from each other. The skin of elephant is thick and it feels little pain, while man feels more pain since his skin is more sensitive than elephant's. However, inflicting the same amount of pain on both elephant and man is equally worse. Thus, inflicting pain or suffering either on human or animal is a morally problematic issue. However, some philosophers have opposed this view. They would like to say that there are some unique characteristics of human beings because of which, only they are entitled to moral considerations. Reasons, cognitive capacities, use of languages are some of the unique characteristics. Nevertheless, the important question that is raised here is - are these unique characteristics the hallmark to be considered morally? Non-human animals also have some unique characteristics, which the human beings lack. Why are not these characteristics considered as hallmark for a being considered morally? Such human centered and biased attitudes have been prevalent throughout the biomedical history. Because of this bias, animals have been deprived of the moral protection in biomedical experimentations. The today's behavioral sciences have strongly

established this with evidences that non-human animals also have some capacities such as intelligence, self-consciousness, memory of the past, expectations of the future etc like human beings. Therefore, it can be claimed that if human beings have special value or claim to be protected, the non-human animals too have the equal rights to exist.

‘Suffering’ actually refers to a kind of extreme unpleasant subjective experience.²⁷ It is purely a conscious mental state. One should not inflict harm on others intentionally. Ludwig Wittgenstein has also pointed out that suffering, as a mental state of consciousness, cannot be meaningfully attributed without language. But Singer has replied in his book *Animal Liberation* (p. 14) that language may be necessary for abstract thought; but, pain or suffering as primitive state has nothing to do with language. Singer said, human infants and young children are unable to use language. Are we to deny that a year-old child can suffer? If not, language cannot be crucial.²⁸ Singer has also said that

Pain and suffering are in themselves bad and should be prevented or minimized, irrespective of the race, sex, or species of the being that suffers. How bad a pain is depends on how intense it is and how long it lasts, but pains of the same intensity and duration are equally bad, whether felt by humans or animals.²⁹

In biomedical research, every step of experimentation on either animals or humans involves some element of risk or harm. It is of course difficult to deny completely the animal’s involvement in experimentation, since it is an essential tool for the biomedical advancement. It has been already mentioned that most of today’s medical achievements would not have been possible without the use of animals in experimentations. Therefore, there is an urgent need for animals’ involvement in biomedical experimentations. On the other hand, it is not morally permissible to

inflict harm even for the noblest purpose. Thus, the issue of inflicting harm becomes a problematic issue in biomedical research. Therefore, it needs a strong justification before enrolling nonhuman animals in biomedical experimentations. Throughout history, the issue of inflicting harm on nonhuman animals has become a debatable one. Two important views concerning the man's relationship with animals are significant here. The animal liberationists believe that animals should be freed from all human exploitation. They are fundamentally opposed to the use of animals in biomedical experimentations. On the other hand, welfarists believe that man can use animals provided their welfare is assured. It denotes the desire to prevent the unnecessary animal suffering. More recently, their views appear to have moved a step further. According to this view, animals should live lives free from avoidable suffering. Moreover, it suggests that the different purposes, for which animals are used should be critically and regularly evaluated.

There are many examples throughout history, where unnecessary harm is inflicted in the name of advancement of biomedical sciences. During that time, the animals were not recognized as sentient beings. So, investigators presupposed that the use of animals in any risky experiments was not an ethical issue. It is to be noted here that though Immanuel Kant first recognized animals as sentient beings, it was Jeremy Bentham who first recognized the inherent worth of animals. But the increasing demand for animal's use in experimentation has turned the issue into more attention. The discovery of vitamins, hormones, antibiotics, safe blood transfusion, new and safer vaccines, insulin, chemo and radiotherapy for cancer are some of the examples.³⁰ The facts of experimentations on animals thus show that it has been increasing steadily. Accordingly, the issue of inflicting harm has become more and more problematic one.

It is to be noted here that no one can deny the inflicting of harm on animals in absolute sense. If it stops in absolute sense then the enhancement of biomedical science will be blocked. Animal welfare activists and ethicists have recognized this fact very well. They consider the pragmatic value of biomedical research. According to this view, the fundamental motto of all biomedical research is to alleviate suffering. Therefore, they try to establish that inflicting harm unnecessarily is a matter of serious moral issue. According to Singer, among the millions of animals used in experimentations yearly, only a few numbers of experimentations contribute to the development of medical sciences.³¹ He said that all this can happen only because of our prejudice against taking seriously the suffering of a being who is not a member of our species.³²

Because of such prejudice, in most of the areas of biomedical sciences, animals have been the victim of unnecessary harms in the name of advancement or societal benefits. Some such areas are basic biology, medical education, psychology, forestry, and new cosmetics etc. Singer has also pointed out that “to be opposed to what is going on now it is not necessary to insist that all animal experiments stop immediately. All we need to say is that experiments serving no direct and urgent purpose should stop immediately.”³³

Thus, Singer clearly suggests that experimentations on animals having no direct and urgent purpose is not permissible from moral point of view since it is nothing but unnecessary infliction of harm or pain on the animals involved. But, how is the possible future prospects of an experimentation determined? It has already been mentioned that the future prospects of an experimentation is only a hoped for. From the scientific point of view, the use of animals is obviously justifiable. Since, it is a scientific necessity. But from the ethical point of view, use of animals in biomedical

research is a controversial issue because of its increasing demand. Ethicists have claimed that there is no such characteristic, which justifies the ethical protection of human beings only and deprives the interest of animals' altogether.

Just as experimentation on humans in biomedical sciences pay special attention to some basic facilities; similarly in the case of experimentations on animals also these facilities should be availed. These facilities protect the research subjects from unnecessary harm or pain. Traditionally, laboratory animals are kept in barren and torturous cages. Now, there has been a move towards enriching the surroundings of animals within the bounds of experimental requirements. As mentioned in the ICMR Report (2000), the main sources of sufferings of laboratory animals are the husbandry conditions, environmental conditions and the scientific procedures. The husbandry condition includes the effects of restricted space, diet, social isolation or unusual grouping. Environmental conditions include noise and smell of other animals. And scientific procedures in experimentation involves the handling, oral dosing, injecting, withdrawal of body fluids, withdrawal of food, withdrawal of specific nutrients etc. (ICMR Report, 2000, p-11). It is to be noted here that taking care of these sources of suffering will definitely minimize the unnecessary abuse of nonhuman animals in the name of biomedical enhancement. In most of the countries national bodies have been set up to supervise and monitor whether the minimum unavoidable facilities are available or not for animal experimentations. Laws have been enacted in different countries to force the concerned authorities to take care of those facilities, which prevent the subjects involved from unnecessary pain or sufferings.

3.4.2. Right to life

It is believed that every human being by birth possesses certain basic moral rights. As living beings, human beings are entitled to possess these rights, which are very important to survive with a dignified life. If this is so true about humans, why don't and cannot we assume that non-human animals also possess certain basic rights? After all, both human and non-human animals are living beings. Thomas Taylor's view about the equal worth of both men and women is significant here. Based on some apparent similarity, such as women have a right to vote, they are capable of making rational decision about the future as men; Taylor concludes that men and women resemble each other. Therefore, they are entitled to enjoy equal rights. However, there is no such similarity between humans and animals. So, humans and non-human animals are different and should not have equal rights.³⁴ Taylor's view is correct up to a point, but it does not go far enough. It is purely the view of 'specicism'. Biological similarities or differences cannot be the relevant criterion for having the right to life of a being. No doubt, there are some obvious differences between humans and animals. But these differences do not stand as barrier against extending the basic principle of equality to non-human animals. The differences that exist between men and women are equally undeniable. The extension of equality from one group to another does not imply that both groups must be treated in exactly the same way, or granted the same rights. Singer argues that --

The basic principle of equality does not require equal or identical treatment; it requires equal consideration. Equal consideration for different beings may lead to different treatment and different rights.³⁵

However, the view of Carl Cohen is also significant here. He believes that only human beings are entitled to moral considerations. The non-human animals are not right holders like human beings; so the questions of moral considerations do not arise in the case of non-human beings. Cohen has pointed out that the “capacity for free moral judgment” is the criterion that distinguishes human beings from nonhuman animals. Because of this criterion, human beings possess rights and other animals do not. But Cohen’s argument is absurd because there are some human beings, such as the brain-damaged, the senile and the comatose, who plainly do not have the capacity for free moral judgments. It proves that rights do not depend on the presence of moral capacity.³⁶

Since life itself is precious, it ought to be recognized as the basic moral right. The right to life implies a strong moral obligation to abstain from taking away life. Thus, it would ensue that no means could justify the taking away of life of humans or animals except in certain situations. All living beings enjoy this right to life equally. It is of course a meaningless question whether human beings possess this right or not. But in the case of non-human animals, it has been a debatable issue. It is to be noted here that, after all, human beings determine who will enjoy the right to life. Prevalence of such biases has often become an obstacle against recognizing all living beings as equally entitled to enjoy the right to life. Therefore, it needs serious attention. If human beings possess the right to life then it means human beings possess certain criteria that are essential for having the right to life. And if animals do not have the right to life then animals do not possess such criteria that humans possess. But such a claim is not justifiable. It has already been mentioned that both human and non-human animals are sentient beings and so they are equally morally considerable beings. If inflicting unnecessary harm or pain on animals were a moral issue then it would definitely

imply that taking life in the name of scientific advancement unnecessarily is also a serious moral concern. Right to life view will protect unnecessary abuse of animals in biomedical experimentations. Philosophers have tried to establish that animals also possess right to life like human beings. For them violation of animals' right to life is a moral issue. Elizabeth Anderson has clearly mentioned in her article, *Animal Rights and the Values of Non-human Life* that all living things including individual organisms and biosphere as a whole have intrinsic value. So, all living organisms are entitled to enjoy their right to life.³⁷ No one can deny that the right to life is the most basic of all rights. It is natural and inalienable. Without it, no one can enjoy his or her other rights. Seventeenth century English philosopher John Locke has rightly identified 'life' as being one of those natural rights that could not be surrendered.

But throughout history a group of philosophers has been raising arguments against the equal right to life of animals like that of human beings. Among them Aristotle, Descartes and Immanuel Kant were prominent. Their arguments are centered on mainly two important points. Firstly, because animals do not have an interest to live, they are not entitled to right to life. Even if animals can have desire and interest, they do not have specifically an interest in life. This argument clearly mentions that specific desire and interest is one of the criteria for enjoying the right to life. As human beings only possess this criterion, they are entitled to enjoy the right to life. But opponents have established that this argument is not right. In fact they have established that many animals are capable of having desires. Joel Feinberg has clearly mentioned in his essay, *The Rights of Animals and Unborn Generations*, that the principle of interest is the criterion for having rights. And those entities that do not have interest, are incapable of having rights according to these principles. For Feinberg, except inanimate beings, all living organisms have interest. Therefore, they

are entitled to enjoy their rights. Here one crucial question can be raised - how interest principle is the criterion for having right? The answer is that a right holder must be conscious about his own good or welfare. And it cannot be possible without having interest. Inanimate beings are not conscious beings. The questions of good or welfare do not arise in the case of inanimate beings. So they are not right holders. But are all animals' conscious about their good or welfare? Though it is not certain, at least higher animals are conscious about their welfare. So they are entitled to enjoy their rights. Does it mean that only higher animals would enjoy their right and others do not? Not all human beings are conscious about their welfare, for example, mentally retarded, comatose, Children etc; but we cannot ignore their right to life. Similarly, in the case of other animals, except higher-level animals, one would not ignore their right to life.³⁸

Again, some group of philosophers has claimed that animals do not have equal right to life because the values of life of animals are less than that of humans. The reason behind their argument is that humans possess certain unique qualities that other animals do not possess. Some of these qualities are autonomy, personhood or rational agency. As, R. G. Frey has said --

The quality of life view of a life's value denies that all human lives have the same value, that all human lives have more value than all animal lives, and that there is something that ensures that no animal life, however high its quality, will be more valuable than any human life, however low its quality.³⁹

This argument can be criticized on the ground that if human beings possess certain unique qualities because of which they possess greater moral value then it is also equally true that animals possess certain unique qualities that human beings do not possess. So it is not justifiable. Animals possess the same moral weight as human

beings. It is to be noted here that having interest is not the only criterion for having right. There are other criteria also. Tom Regan has suggested that the most reasonable criterion for having rights is not the possession of interests but the possession of inherent value and being the subject of a life. For him 'subject-of-a-life' requires not simply sentience, but the capacity to have propositional attitudes, emotions, will and an orientation to oneself and one's future.⁴⁰ This criterion draws the line of rights bearers at least to include the great apes, dolphins, whales, dogs, pigs and arguably all mammals and birds.⁴¹

Thus, it becomes clear that there is no legitimate ground to claim that only human beings enjoy the right to life. It is a fact that one without any hesitation kills an animal. But, the same cannot be done in the case of humans. It is obviously a reflection of our prejudice that only human beings are entitled to moral considerations, the rest are immoral beings. They are all like inanimate beings. But this attitude has changed now a day. It has been now established that animals are also moral beings like human beings. So the moral values that are attributed to human beings are also attributed to other animals. In that case, the value of life should be equally considered. But the animals' right to life becomes a problematic issue. The fact is that in the name of medical experimentations millions of animals are killed yearly in laboratories. It is estimated that worldwide the number of animals killed in the name of research is 41 to 100 million annually.⁴² But no one can reasonably claim that all experimentations have contributed significantly toward the development of medical sciences. No doubt, a major portion of research on animals offers some highly significant otherwise unattainable benefits. Still the justification for research on animals is a debatable issue. It needs to be analyzed from both moral and legal points of view. From moral point of view, it is important to ensure whether animals

have moral status like human beings. And from legal point of view, it has to be ensured how the laws are enacted to protect the right to life of animals in different countries.

3.4.3. Denial of subjectivity

In bio-medical experimentations, the denial of subjectivity of nonhuman animals is another crucial moral issue. Advocates of animal rights have pointed out that --

Subject hood generates rights not only against the infliction of pain but to the conditions for integrity of consciousness and activity, including freedom from boredom, freedom to exercise normal capacities, freedom of movement and the right to life.⁴³

In accord with the deontological theories, advocates of animal rights hold that all non-human animals are the bearers of these rights. Moreover, it would be a morally problematic issue if anybody superseded these rights by the aggregate interest of humans or any other beings. But throughout history it has been believed that only human beings possess subject hood. The objective behavioral and brain evidences have been proving the subjective experiences of human beings. However, now the scientists are able to prove that these evidences are quite similar in other mammals and non-mammalian species. Thus, on the weight of the same objective evidences, subject hood may be conserved in other species also. Therefore, the subjective experiences of animals are as valuable as those of the human beings are. It would be a problematic issue if anybody fails to give due consideration to animals' subjective experiences. Non-human animals have the capacity to experience pleasures and pains. They also have their interest, autonomy. In short, it can be said that the life of nonhuman animals is as valuable as the life of human beings. But in biomedical

experimentations, non-human animals have been used as a research subjects. When non-human animals are used as research subjects, it becomes an object or means of biomedical research. They are used like the insensitive automata. Their subjective experiences become secondary in biomedical experimentations. But from moral point of view, it would not be allowed to treat nonhuman animals as research subjects only and deny their subjective experiences. The advocates of animal rights like, Tom Regan have vehemently criticized the use of animals in biomedical research for whatever ends. For Regan the 'subject-of -a-life' criterion identifies a similarity that holds between moral agents and moral patients. This criterion roots out the degrees of value, that human beings have greater value than animals. He has also pointed out that moral patient- animals in particular, should be treated as moral agents are treated with respect, since it is their due as a matter of strict justice.⁴⁴ But, in biomedical sciences, because of some similarities in nervous systems, animals are used as substitutes of human beings, preferably in dangerous types of research. Biomedical scientists claim that nonhuman animals have a very significant role in the whole process of biomedical advancement. It is because human beings cannot be used as research subjects in the first stage of most research, perhaps in dangerous types of research. Human being involvement as subject in such research at the first stage creates some unavoidable moral issues. Perhaps from the legal as well as societal perspectives, human beings are not allowed to be involved as research subjects. However, in such cases, scientists prefer nonhuman animals. Does it not mean that animals as sentient beings create less moral issue than human beings? The answer is not straightforward since the whole issue is a debatable one. The advocates of animal welfare hold, in accord with the Utilitarian logic that for greater interests or welfare animals may be sacrificed. But it is opposed by the advocates of animals' rights. Here, one thing is

very clear that while non-human animals are used as research subjects for the benefit of human society as well as the animal's welfare, the involved subjects are used simply as means. Since animals are not merely sentient beings but also being who possess subject hood, they have intrinsic value. But while experimenting on nonhuman animals, their intrinsic as well as inherent worth is not taken into considerations. Cat sex experiment at the American Museum of Natural History in New YorkCity (1960) is one of the historic examples,⁴⁵ where benefits of research as well as the welfare of the involved subjects were completely ignored. In these experiments, the researcher damaged the subjects in various ways in order to evaluate their sexual performance. Such experiments really turned the attentions of common peoples. In these experiments, subjects involved were physically abused by removing parts of their brains, destroying their sense of smell, and deadening their sense of touch by severing nerves in their sex organs. Such use of non-human animals can be compared with Descartes' view that animals are simply insensitive automata. But advocates of animals' welfare as well as animals' rights have tried to establish with evidences that animals are not insensitive beings as Descartes says. They have claimed that non-human animals are sentient beings like human beings. Like human beings, non-human animals can feel pleasure and pain. They also can enjoy autonomy; no doubt, it is preference autonomy. Behaviorists have proved that some non-human animals possess the higher cognitive capacities. Apart from these capacities, non-human animals are also, as behaviorists claim, responsible beings towards their kids and family. Still knowing or unknowingly non-human animals have been used as research subjects without taking care of their welfare. Therefore, the pertinent issue, as R. G. Fry has pointed out, is relevant here:

What justifies using animals in scientific research in ways that would be considered improper to use humans, even human who consented to the treatment in question.⁴⁶

Legal enforcement also fails to protect the welfare of non-human animals practically. It is because most of the laws framed by countries to protect the dignity and welfare of nonhuman animals, but in reality, are confined only to papers. The implementing agencies as well as their mechanisms are greatly responsible for this. Therefore, there is an urgent need to review the institutional mechanism for taking care of the welfare of the research subject involved in any biomedical research.

3.4.4. Ownership

It is believed that 'ownership' grants some rights, so that owners can exercise their right to their property. According to this concept, owners can exercise absolute and exclusive control over their property. Thus, some individuals take ownership and property to refer to the absolute control of things by the owners. William Blackstone in the 18th century evidently approved of this view in his book, *Commentaries on the Laws of England*.⁴⁷ For him, property confers on an owner the one basic right to exclusive and absolute control over his or her property. Thus, if I own a book, I may read it, tear its pages out to start a fire, use it as a doorstop, give it away, and sell it and so on. Moreover, nobody can take it away from me without consent. Since, I own the book I have complete and exclusive control over it under this concept. If so, then it would be the most significant obstacle to achieving justice for non-human animals.

But, the very concept of 'ownership' is not not that simple. 'Ownership' does not grant an owner a single right amounting to exclusive and absolute control over their property. There are numerous examples that do not confer this kind of exclusive

and absolute control. For example, if I own a car, I cannot drive it disobeying the road rules, I must follow the traffic rules while driving in road; similarly, if I own an institution, I cannot use its employees in whatever way I wish. Such examples have led many philosophers to move away from the Blackstonian ‘absolutist’ concept of ownership.

The ancient authors speculated about the relation between property and virtue, a natural subject for discussion. The justification of private property raises the serious questions about the legitimacy of self-interested activity. Plato, in his *Republic*, argued in favor of collective ownership. For him it is necessary to promote common pursuit of the common interest and to avoid social divisiveness. Aristotle responded to Plato by arguing that private ownership promotes virtues like prudence and responsibility. He pointed out in his *Politics* that when everyone has a distinct interest, men will not complain of one another, and they will make more progress, because everyone will be attending to his own business. Aristotle reflected on the relation between property and freedom. For Aristotle, ownership makes a free man and thus suitable for citizenship.

Now it is commonly thought that ‘ownership’ is a relational concept. A. M. Hornore is the most famous exponent of this relational concept. According to this concept, ‘ownership’ refers to a particular set of ‘relations’ which constitute the general and qualified features of ownership. Hornore has pointed out that the eleven standard relations that an owner can stand in with regards to his property ‘X’. They are- the right to possess X; the right to use X; the right to manage X; the right to the income from the use of X; the right to the capital value of X; the right to security against the expropriation of X; the power to transfer X to another; the absence of any term on the possession of X; a duty to refrain from using X that may harm others; the

liability that judgments against him may be executed on X; and the right that when the claims that others have over X lapse they will return to him.⁴⁸

According to Honore, these are the common features of ownership. These features clearly express that the owner has certain rights, duties, liabilities, and liabilities upon her property. It is worth mentioning that 'ownership' also implies the owner's priority over her duties, rights and liabilities. Some proponents of justice for animals have argued that ownership of animals prevent them from recognizing their moral status. This claim has been based on the idea that being owner means that an entity can only be valued in terms of its utility to its owner. But, for the proponents of animal welfare, it is imperative that sentient animals have moral status of their own. They are worthy of moral considerations for their own sake. Such consideration is not dependent on the interest and sentiments of human beings. There are numerous examples that a great many owned animals have been treated as mere commodities without moral status. For example, to reduce the costs, animals are crowded into small areas that cause them great discomfort. This increases the market value of animals at the cost of animal's welfare. Furthermore, animals have been routinely killed when they have no market value. Thus, a piece of property owned by somebody necessarily entails treating it simply as a commodity. Its value is determined solely by the market, without moral status of its own.

However, it is not evident that co-modification is inherent in the concept of ownership. It is perfectly possible to enjoy the rights to possess, use, manage, derive income, and buy and sell an entity without treating that entity solely in terms of its market value. Indeed, the present situation of many animals shows that it is perfectly possible both to own them and to recognize that owners have direct obligations to their property for their own sake. Now legislations have been enacted in different

countries to protect animal's interest for their own sake. It is also true that legislations do not meet all our obligations to sentient animals. They have been introduced for the direct benefit of animals themselves. But, it does not require the abolition of an ownership of animals by humans. In short, ownership does not preclude the recognition of moral status or rights of animals.

Many proponents of animals' rights argue that sentient animals possess interest. Their most important interests would have to be protected through assigning those animals rights. They also claim that some interests of animals are so important that rights must protect them, even if that protection incurs costs to the overall good. Most proponents of animal rights wish to recognize that calls for the recognition of animals' rights are call for animals to be awarded legal rights. For example, anti-cruelty laws confer on animals the legal right is not to be subjected to cruel treatment. The recent Animal Welfare Act in England and Wales goes further than this anti-cruelty law. This Act establishes upon owners and keepers of animals a duty of care to ensure that their animals' welfare has to be provided for. In the light of such legislation, it is perfectly coherent to claim that owned animals in England and Wales possess a legal right to this minimum standard of care. But, opponents of animals' rights contend that anti-cruelty and animal welfare laws confer no meaningful rights. Their view is not to be saying correct. There is nothing about ownership, which logically entails that what has been owned cannot possess rights.

3.5. Critical assessment: addressing the moral issues

Discussion on the moral issues of experimentations on animals, really draw our attention to the fact that its justification of animal experimentation is not a simple one. It is a much more problematic issue than it is usually understood. In order to justify

the involvement of non-human animals in a biomedical experimentation, it is most essential to arrive at a balance between the scientific necessity and the moral requirements. Hence, there is an urgent need to develop a middle ground between the urgency of experimentations on animals and retaining the sanctity and dignity of sentient beings. Sometimes the question of priority arises, which may raise the conflict of obligations. Guidelines have been enacted at the national and international levels to secure the welfare of animals in biomedical research. For example, the World Health Organization propagated the Guiding Principles for Biomedical Research involving Animals in 1985. The objective of this guideline was to provide a framework within which specific legislative or regulatory systems could be built in the countries including the developed and the less developed. Animal welfare organizations have also been formed to protect the rights of animals at national and international levels. Some such organizations are Laboratory Animal Science Association, 1963 (LASA); Laboratory Animal Veterinary Association, (LAVA); Institute of Animal Technology, 1950 (IAT); European Center for the Validation of Alternative Methods, 1992 (ECVAM) etc. All these organizations have been taking care of the matters of animal's welfare that includes anesthetics, analgesics, and postoperative care.

There is no doubt that testing on animals is essential for medical progress, particularly for drug and vaccine research. As Sir John Vane has rightly pointed out, the only way to be confident that a new medicine is likely to be safe and effective is to understand how that medicine behaves in a living system. That understanding can only be obtained from animal research.⁴⁹ Without experimentation on animals, human lives would have been jeopardized. The British Pharmacological Society has also recognized the use of animals as an essential component in drug discovery. It has

been mentioned already that a good deal of scientific research requires both human and nonhuman animals. But, in most of the biomedical research we use non-human animals only as means to the end. It means, as R.G. Frey has pointed out that we may not use human in all the myriad ways that we use animals for research purposes.⁵⁰

What justifies using animals in scientific research for which use of humans likely to be improper, even if he consents? Sometimes it can be said that it a scientific necessity in favor of both humans and animals welfare. But establishing the necessity is also a problematic issue. For something to be necessary in ethical term requires more than a simple appeal to what is customary, desirable, or even beneficial. Human wants or pleasures do not constitute moral necessity. By definition, necessity is an urgent and unavoidable requirement. It has to be dictated by some compulsion or coercion that makes any other act impossible. When the concept is defined in this way, we can see immediately that only the weakest possible meaning of the word can be reasonably applied in the case of experimentation on animals. It is to be noted here that different guidelines formed to protect the rights of animals in any biomedical research, work only in papers. Consequently, the aims of these guidelines have not been fulfilled. The moral issues of experimentations on animals have already discussed these lacking. Therefore, it would be appropriate here to address properly the above-mentioned moral issues raised by experimentations involving non-human animals. It will definitely help us to understand why the existing guidelines for experimentation on animals in some countries work only theoretically.

3.5.1. Respecting sanctity of life

It is often debated that experimentations on non-human animals sabotage the sanctity of animal's life. Killing is bad and it is essentially so. Life is precious. It does not

matter how worthy that life may appear in other's eye. We have no right to terminate it or destroy it. Every living being has an intrinsic value. So, taking life is intrinsically wrong. Sanctity of life simply asserts that there is a value of life to be alive. The value of life cannot be weighed in terms of other values. As a rational being, it is our moral duty to respect the sanctity of life. Here we may raise one relevant question: Are inherent value and intrinsic value the same? Of course, not, Tom Regan in his book, *The Case for Animal Rights* has maintained a clear distinction between them. For him, the inherent value of any given moral agent is not equal to any sum of intrinsic values. Moral agents as having inherent value is something different from and something more than, mere receptacle of what has intrinsic value. Here, we can recall the cup analogy, according to which the value of the cup is not the same as anyone or any sum of the valuable things the cup contains. Thus, individual moral agents themselves have a distinctive kind of value according to the postulate of inherent value. There are two options concerning the possession of moral agents of inherent values. Firstly, moral agents might be viewed as having inherent value in varying degrees. Secondly, moral agents might be viewed as having inherent value equally. If moral agents were viewed as having inherent value in varying degrees, then there would have to be some basis for determining how much inherent value any given moral agent has. To accept this view of the inherent value is to pave the way for a perfectionist theory of justice, according to which those with less inherent value could justly be required to serve the needs and interests of those with more. But such an interpretation of justice that moral agents have inherent value in varying degrees is not acceptable. So, the latter view that all moral agents as having inherent value are equally valuable, is reasonably preferable. There are three corollaries of this conclusion, which are worth noting. First; the inherent value of moral agents cannot be viewed as something they can earn

by dint of their efforts or as something, they can lose by what they do or fail to do. Secondly; the inherent value of moral agents cannot wax or wane. Thirdly, inherent value of moral agents is independent of their being the object of anyone else's interest. Here, another important question can be raised -- *are the inherent values restricted to only moral agents?* As Immanuel Kant has pointed out, the notion of inherent value applies to all moral agents and only to moral agents. However, Tom Regan has pointed out in his book *The Case for Animal Rights* that this view of Kant is arbitrary. For Regan, any position that denies that we have direct duties to those moral patients with whom we have been and will continue to be concerned, is rationally defective. There are some duties regarding animals we owe directly to them. Moreover, some of the harms done to these moral patients are harms of the same kind as harms done to moral agents. Therefore, we cannot consistently hold that moral agents and patients can never be harmed in relatively similar ways. Thus, if we view all moral agents as having equal inherent value, then we cannot arbitrarily deny it to moral patients. Here we can mention another important point that is common to both moral agents and moral patients, that is, both are alive. According to some thinkers like Albert Schweitzer, it is the possession of this characteristic of being alive, which marks off the class of individuals who have inherent value from those who do not. Another relevant question is: is being alive a necessary or sufficient condition for an individual to have inherent value? No doubt, both the views have some important difficulties. Still, being alive as a sufficient condition for an individual having inherent value is a suggestive view. One important difficulty of this view is that individual blades of grass, potatoes, and cancer cells, all are alive; so we should owe direct duties, since all have inherent value. But it is not clear how we reasonably could be said to have direct duties to collections of such individuals. An

alternative view is that it is subject-of-a-life criterion, which makes an individual inherently valuable. For Regan,

Individuals are 'subjects-of-a-life' if they have beliefs and desires; perception, memory, and a sense of future, including their own future; an emotional life together with feelings of pleasure and pain; preference and welfare interest; the ability to initiate action in pursuit of their desires and goals; a psychological identity over time; and an individual welfare in the sense that their experiential life fares well or ill for them, logically independently of their utility for others and logically independently of their being the object of anyone else's interests.⁵¹

This criterion involves more than merely being alive and more than merely being conscious. They, who satisfy the subject-of-a-criterion, themselves have a distinctive kind of value-inherent value-and are not to be viewed or treated as mere receptacles. This criterion identifies a similarity that holds between moral agents and patients. Is this similarity a relevant one that makes either a moral agent or a patient inherently valuable, intelligible and non-arbitrary? Of course, it is a relevant criterion. There are some important grounds because of which we can justify it as a relevant criterion. One very important aspect is that this criterion does not assert or imply that those who meet it have the status of subject of a life to a greater or lesser degree.

3.5.2. Investigator's duty to care

In biomedical experimentations, the investigators are deeply concerned about the rational and humane use of animals. According to the latest guidelines of research on animals at national and international level, the investigators have great responsibilities towards the wellbeing of the subjects involved. They have affirmative duties of humane care and use, and are supported by practical ethical and scientific principles.

It is to be noted here that taking the responsibilities for the wellbeing of the subject involved is the minimum ethical standard for researchers and their institutions. Most of the time these responsibilities of investigators are determined by the scientific discipline, nature of animal use, and species involved.

The biomedical scientists generally work to unfold the complicated process of life and to provide new measures for health and welfare of the society i.e. the humans, the animals and the environment. There is, therefore, a need to provide them certain degree of freedom and adequate facilities to use animals whenever necessary. It is evident that certain life processes cannot investigate without involving completely the animal system. The in-vitro alternatives can only provide limited information. These cannot totally replace the animals in experiments. This is why the use of animals continues to be mandatory to meet the statutory regulatory requirements. At the same time, it is an obligation of the scientists to ensure that no unnecessary pain or injury is inflicted on the animals involved in research, and they are maintained in best possible environmental conditions. Thus, investigators have personal responsibilities for all matters that relate to the wellbeing of animals. These responsibilities extend throughout the period of use of animals as approved by 'Animal Ethics Committee.' Apart from these, investigators should seek advice and information from competent experts when necessary. According to the '*Australian Code for the Care and Use of Animals*'⁵², an investigator, while experimenting on animals must apply the principles or codes in all aspects of the care and use of animals. "Respect for animals" is one such fundamental principle of biomedical research involving animals. According to this principle, an investigator should use animals only when it is justified by the evidences. The justification of animal's involvement demonstrates that the use of animals has potential benefit for humans, animals or the environments and suitable

alternatives to replace the use of animals to achieve the stated aims are not available. Secondly, the investigator is responsible for the wellbeing of animals used for scientific purpose. At all stages of care and use of animals, measures should be taken to ensure that the animals' environment and management are appropriate and support the animals' wellbeing. Another very important responsibility of an investigator is to avoid or minimize harm, including pain and distress to the animals involved. Animals have a capacity to experience pain and distress, even though they may perceive and respond to circumstances differently from humans. Therefore, investigators must be ready to take steps at any time to safeguard the wellbeing of animals by avoiding or minimizing harm to animals, including pain and distress. If it appears to the investigator that the animals are experiencing pain and distress that will not be alleviated, then the endpoint of the project must be planned as early as feasible to avoid or minimize the pain and distress of animals involved.

3.5.3. Well defined ethical principles:

So far as ethical principles are concerned two relevant questions may be considered important here: first, what are the features animal beings which make them proper subject of our moral concern? Secondly, how should those features be taken into account in our moral reasoning about animals' interest?

Five features have the potential to give rise to moral concern. They are - sentience, higher cognitive capacities, capacity for flourishing, sociability, and possession of a life. It is important to explore how to consider these features through moral reasoning. From consequentialist perspective, the following issues need to be considered to establish whether justification of a particular form of research on animals is possible. Firstly, research may be undertaken to achieve various goals, for

example to advance basic biological knowledge, or to directly improve medical practice. In evaluating a research project involving animals, it is important to ask how valuable is the goal and for whom? How speculative might the gain be? Two general arguments are usually made when considering the value of research: firstly, because it is difficult to predict the advancement of knowledge, therefore it is difficult to assess the value of such research. Several questions need to be answered here. One very important question is- if results from a basic research project are viewed as being unlikely to contribute to any practical application, can the research be justified? According to the second argument, every scientifically sound research project involving animals is intrinsically valuable, since it contributes the sum total of scientific knowledge about a subject. Thus, it will always have some intrinsic worth because of the knowledge gained. Based on this argument, it is considered wrong to measure the value of research purely in terms of its immediate benefits.

From deontological perspectives, at least some uses of humans and animals are absolutely prohibited. According to this approach, the capacity for sentience is not merely an input into a utilitarian calculus, but the basis of a *right* not to be subjected to pain and suffering. Thus, any sentient being has a right not to be used purely as a means to the ends of others if to do so would cause it pain or suffering. Deontological approach thus combines its' constraints with the utilitarian theory of value on action and would appear to rule out all research involving animals that causes any degree of pain.

Thus, drawing a line between the 'weighing' (utilitarian/consequentialist) view and the 'absolutist' (or rights-based) view may be very difficult. But still there could be room for a complex view in which different types of pain call for different types of moral response, in which some pains are permitted and others not, involving

some weighing and some absolute prohibitions. Such view can be called the ‘hybrid frameworks’. It contains some elements of the consequentialist theory, and some of the deontological approach. Most views in the current debate are of this form, even if there is great disagreement about the details. It is to be noted here that if we accept the most views as hybrid, then we can see that the debate comes down to disagreement on two questions: first, what are the absolute constraints? Secondly, how do we consider different morally relevant factors within the permitted area? To answer these questions, we will always need to consider the goals of research, the probability of success, animals that are to be used, the results of research, and the possible alternatives.

It is significant to consider here the existing framework of animal research from four perspectives: firstly, if humans see value in research involving animals, then it requires no further ethical justification. It is the ‘anything goes’ view. Secondly, the ‘balance justification’ view according to which, in accepting research involving animals, one acts with full moral justifications. Every reasonable step must be taken to reduce the costs that fall on animals, and that some forms of research are not justified. Thirdly, the ‘moral dilemma’ view, according to which most forms of research involving animals pose moral dilemmas: on the one hand the current scientific approach provoke the use of animals as necessary to comply with the moral imperative to cure human disease and to save human lives. On the other hand, it also means that animals are treated in ways, which are morally wrong. Both alternatives cause severe regret to moral agents, and there is no justification either in principle or in general for conducting, or neglecting to conduct, research involving animals. In order to prevent further dilemmas, the implementation of the three Rs, particularly of Replacements, must be a priority. Lastly, the abolitionist view ‘according to which

humans experiment on animals not because it is right but because they can. Since, any research that causes pain, suffering and distress is wrong, there is no moral justification for harmful research on sentient animals.⁵³

3.5.4. Institutional mechanism

To reduce or eliminate the pain and suffering that result from experimental procedures we need ethical codes and conducts. In addition, we need national as well as regional laws since they can enforce the concerned institutions to address the ethical themes while experimenting on animals. Barbara Orlans has identified eight ethical themes in this context.⁵⁴ These are -1. Basic husbandry requirements & facilities must be available; 2. Control of animal pain and suffering; 3. Review of proposed experimental protocols; 4. Investigator's competency; 5. Bans on certain invasive procedures; 6. Application of the Three R alternatives; 8. Use of ethical criteria for making decisions; and 9. Cost benefits analyses mandatory for use of animals in research. She has pointed out that countries in which all eight themes are addressed have the highest standards of animals' care and use. According to Orlans, by 2000, at least twenty-three countries worldwide had enacted laws requiring certain humane standards for experimenting on animals⁵⁵ and only one country officially bans all experimentations on animals that is the small European principality of Lichtenstein. She has also mentioned in his report that currently no legislation on humane use of laboratory animals exists in South American, African or many Asian Countries. Though guidelines and voluntary controls exist in these countries, sometimes policy remains confined to papers only in the absence of any enforcement provisions. Thus, the underlying argument of Orlans is that legal enforcement can compel the concerned institutions towards the humane use of animals in laboratories, and consequently it would be possible to minimize the pain and suffering of laboratory animals.

But it is a fact that unnecessary abuse is still there in most of the countries though they have legal provisions to prevent it. Why it happens? What would be Orlans' solutions in such cases? It happens not only in animals but also in the case of humans. There is a provision in law to protect the rights of humans in almost all countries in the world, but still human rights have been violating in our day-to-day life. Therefore, it can be said that only legal enforcement cannot protect the rights of either humans or animals in absolute sense. It is possible through legal provision to minimize the unnecessary abuse.

It is generally to be considered a matter of plain humanity that the degree of animal pain and suffering be minimized. Indeed, it is a moral imperative. But, such provisions have not necessarily come with the first enactment of a national law. For instance, in the United States, animal pain was not addressed in 1966 when the law was first passed. Indeed, at that time, whether animals actually perceived pain was widely doubted. Not until 1976 was the Animal Welfare Act, the federal law governing laboratory animals amended to require for the first time the use of anesthetics and analgesics. As a result, research on animal pain and its mitigation accelerated. Textbooks devoted to the physiology and relief of animal pain were published, new anesthetics and analgesics were developed, and postsurgical care became an important topic. Great progress has been made, and by now it is well recognized in national policies throughout the world that vertebrate animals do indeed feel pain. Methods of killing of animals represent another aspect of control of pain. In the 1980 s, the American Veterinary Medical Association established standards for recommended euthanasia practices to ensure that methods used are as rapid and painless as possible. These standards, which are now law in the United States, have been repeatedly updated, and other countries have adopted similar standards.⁵⁶

Experimental procedures that cause intense and prolonged animal suffering have been the focus of the greatest public protest and demands for prohibition. Since about the 1970 s there has been an upsurge in public concern about the treatment of animals in research. It stems both from the influence of the animal-rights movement and from the scientific discoveries that have widened our appreciation of the capacities and feelings of animals. Even if useful scientific results might be obtained, the lack of justification holds. This awareness parallels the passage of stronger law to protect animals. Some success in banning such activities has been achieved. A 1986 amendment to German law, the Animal Protection Act, forbids experimentation on animals for development and testing of weapons, as well as the testing of tobacco products, washing powders and cosmetics. Netherlands and United Kingdom also ban the use of animals for cosmetic testing. Recently, the British government announced its commitment to stop licensing any further testing of tobacco or alcohol products. Indeed, in the whole field of testing on animals, with the bans on notorious LD50 test (the lethal dose that painfully kills 50 percent of the animals), and the Draize eye irritancy test (which can cause blindness in rabbits) considerable progress has been made.

The application of the three 'R's alternatives is out of the eight themes, as Orlans has pointed out. William Russell and Rex Burch first defined these principles in their seminal book, *The Principles of Humane Experimental Technique*, 1959. These principles were perhaps coined as alternatives of the necessity of experimentations on animals. If there is no alternative to experimentations on animals, that the desired and desirable objectives cannot be achieved in other way, then only involvement of animals in research should be justified. As an alternative approach, its goal is to enable the avoidance of animal use. Here, the first term implies any

decrease in the incidence of severity of inhumane procedures applied to those animals that are used. The second implies the reduction in the number of animals used to obtain information of given amount and precision. And the third implies the substitution of conscious, living, higher animals with insentient materials. Thus, it states that experimental procedures should be refined to lessen the degree of pain or distress; that the number of animals used should be reduced consistent with sound methodical design, and where possible, non-animal methods should be used in place of the use of animals. Legal mandates requiring the three 'R's facilitate the acceptance of these concepts by investigators and oversight reviewers. The countries that specifically address all three 'R's in their legislation, are- the United States, the Netherlands, Sweden, Switzerland and New Zealand. Both the humane and scientific communities are increasingly accepting the Three 'R' principles worldwide. Although antivivisectionists focus on replacement alternatives exclusively, others believe that incremental improvements in laboratory animal welfare are best achieved at this time by pursuing all three 'R's. Promising advancements can be made in refining experimental methods by improving anesthetic and other pain-relieving regimens, using humane experimental ends, and employing only rapid and painless methods of euthanasia. Evidence of the increasing role of all three 'R's is indicated by the success of the continuing series of World Congress on Alternatives and Animal Use in the life sciences, that attract participants from about forty countries. Although the concept of the three 'R's is now fairly well accepted on a universal basis as an ideal, it has proved very difficult to persuade regulator bodies to stop requiring safety tests that involve use of whole animals before a new product can be approved. Although validated non-animal tests are available in many cases, the regulatory bodies continue to mandate whole-animal testing. The non-animal tests are there-by unreasonably

being held to a much higher standard of validation than animal tests. The evaluation of the progress in implementing the three 'R's is new topic. In addition, it is in its infancy; most countries do not have adequate data for analysis. However, the Netherlands provides a unique model. Analysis of official data shows a significant decline in the percentage of total experiments that involve severe animal pain, from 29.3 percent in 1994 to 18.8 percent in 1997. In addition, over the same period, the number of animals used has dropped by about half: in 1984, the total was 1,242,285 and in 1997, it was 618, 432. So, there has been not only a reduction in numbers but evidence that refinements and replacements are being applied. In addition to this, since 1989 research establishments in Netherlands report to the government whether new alternatives to experiments on animals have been introduced in their laboratories.⁵⁷

The availability of alternatives to research involving animals is another important factor. If alternatives are not available, it will appear important to be able to assess the reasons- why are alternatives logically or conceptually unavailable, or are they unavailable because of political, financial, logistical or other practical reasons? Law (UK) can be used to observe whether animals used for research are at the receiving end of male-treatment. But, laws are not adequate and we must ensure that such laws are followed without any exception. Another relevant question is- how can an investigator know whether there is an alternative way of obtaining the relevant information if the study of alternatives is so poorly funded? It is to be noted here that alternatives are developed primarily by industry, academia and relevant charities. It is also important here to be clear about the responsibilities of concerning authorities regarding the development of alternatives, since it grants licenses for the conduct of research on animals, much of which is publicly funded. In this regard, Government

also contributes significantly for research on animals through regulatory requirements. But from regulatory and practical perspectives it may be reasonable to take into account only those options that are currently available. This may be less acceptable for ethical evaluation. So, it needs to be considered in undertaking an ethical review of a research proposal in the light of available alternative methods. Here, it can be useful to consider the reasons- why other alternative methods are not yet available?

3.6. Conclusion

In conclusion, it can be said that experimentation on non-human animals is a practical necessity. Throughout the history, this truth has been established. Even today, the biomedical enhancements cannot be imagined through the absolute prohibition of non-human animals' use. Of course, the use of animal in biomedical research can be minimized. But it is not possible to avoid completely the use of animals in biomedical experimentations. However, ethicists have been suggesting that following certain ethical codes and conducts could minimize the harm on non-human entities. No-doubt there are some alternative ways, which can work as substitute for experimentations on animals, such as, computer model, digital facts and figures etc. But there are many complex situations which cannot be answered even by the most sophisticated alternatives presently available to the scientific communities. Given this situation, the only way that we could think of reducing and minimizing the pain and agony of animal beings in experimentation is the implementations of strict ethical codes and conducts within institutional frameworks. Besides, as suggested in the last part of this chapter, our constitutional bodies and recommending bodies could also come up with strict laws so that the violation of basic ethical principles does not happen. In a country like ours this is at this moment most important. Whatever little awareness or ethical guidelines we have they are seemingly inadequate.

Notes & references

¹ Note: In ancient Greece, physicians dissected animals for anatomic studies. They valued the pursuit of knowledge for its own sake and sought to understand how and why the body malfunctioned. Both exploration and experiment were the means to obtain medical knowledge for the ancient Greek physicians.

Franco, N. H. (2013). Animal Experimentation in Biomedical research: A Historical Perspective. *Animal*, 3, p-239.

² Note: Galen argued that vivisection was the only way to reveal the function of biological structures. His many Treatise of medicine was based on his technique of dissection and vivisection. He developed the technique of dissection and vivisection of animals to an unprecedented level. He firmly established that animal experimentation as the standard method for learning about human anatomy and physiology.

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⁵ Note: Both of them were the most influential Christian theologians of the middle age. According to Augustine animals were part of a natural world created to serve humans (as much as the earth, water & sky), and humankind did not have any obligation to them. Similarly according to Thomas Aquinas the mistreatment of one person's animal would be sinful, not for the sake of the animals in itself, but because it is someone else's property.

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