

## Poultry Welfare Issues: An Overview

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### Abstract

Keeping animals well-nourished and free from discomfort, pain and stress are essential to sustain a good welfare state. Though it is must to increase production for fulfillment of our need but it's our prime duty to avoid suffering of animals as part of humanity. Poultry welfare improves health and maximizing efficiency which resulted in meat and poultry products that are affordable for all sector of society so poultry welfare issues be included in future international trade talks. Managemental strategies based on good current scientific information and proactive attitude are the key to success.

**Keywords:** Discomfort; Stress; Suffering; Humanity; Welfare.

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## Introduction

Now day's human population is increasing like anything irrespective of natural resources such as land and water. Human population keeps on growing but land and water remains constant which results into scarcity of food. To meet the need of hunger human increased food of animal origin by manifolds. Poultry meat is the most preferred and cheapest source of protein. The world's poultry population is 648.83 billion and India ranks third in egg production and fifth in poultry meat production. Likewise in livestock sector also we are successful in increasing animal production for our selfishness. But, if we put humans above animals and treat animals badly then that is wrong. People who disregard animals and abuse them are generally capable of abusing humans too, but our father of Nation Mahatma Gandhi said that, "The greatness of a nation and it's moral progress can be judged by the way it's animals are treated."

Animal welfare is a controversial topic in modern animal agriculture, due to discrepancy of opinions regarding how animals should be maintained and treated. So animal welfare is important as every living thing on this earth is of equal value.

### *History and Background*

As per the Indian tradition and culture, animals always had a respect and a special place in society. Each Hindu God or Goddess is seen with an animal, so they were seen as religious symbols of something great and treated with compassion as part of god's creation. The

doctrine of Karma, which is important to Jains, Buddhists and Hindus, teaches that any improper behaviour will have to be paid for in future life, so cruel acts to animals should be avoided.

- King Ashoka promoted the kindness among all living life on this planet during 274-232 BC.
- Martin was founder of first animal welfare organization "Society for the Prevention of Cruelty to Animals" in 1824.
- United Kingdom- first country, to implement law to protect animals (Cruelty to Animals Act, 1876)
- The issue of farm animal welfare under modern production methods was first brought to the attention of the general public with the publication of a book by Ruth Harrison in 1964 called "Animal Machines." [1]
- An improved understanding of motivation, cognition and the complexity of social behaviour in animals has led in the last 30 years to the rapid development of animal welfare science.

### *Meaning of welfare*

The welfare of any animal, including human beings, is understood to be a combination of multiple dimensions including physical and mental health, experienced or perceived well-being, and the ability to satisfy drives or needs. [2]

According to oxford English dictionary welfare means 'well being; happiness & thriving or successful progress in life'

FREEDOM	INFLUENCING FACTORS
1. Freedom from hunger and thirst	By ready access to fresh water and a diet to maintain full health and vigour
2. Freedom from discomfort	By providing an appropriate environment including shelter and a comfortable resting area
3. Freedom from pain, injury or disease	By prevention or rapid diagnosis and treatment
4. Freedom to express normal behaviour	By providing sufficient space, proper facilities and company of the animals own kind
5. Freedom from fear and distress	By ensuring conditions and treatment that avoid mental suffering

In 2008 the OIE adopted a definition on animal welfare: "Animal welfare means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/killing.

According to Saunders comprehensive dictionary animal welfare means-The avoidance of abuse & exploitation of animals by humans by maintaining appropriate standards of accommodation, feeding & general care, the unnecessary discomfort & pain (Saunders comprehensive vet. Dictionary, 2007).

These definitions clearly show that an animal can experience both good and poor welfare and that there are important factors that influence its welfare. These factors are often summarized by Farm Animal Welfare Council as the Five Freedoms, (1993) which are given below together with the factors that influence the animal.

#### *Need Of welfare*

Animal welfare plays a vital role in the economic status of a country. For many centuries, western culture largely excluded animals from the realm of morality. Physical, physiological, and psychological similarities between humans and many nonhuman animals make it logical to conclude that these nonhumans can experience pain, suffering, and enjoyment[3,4]. Indian government though given general guidelines of prevention of cruelty of animals, specific guidelines for welfare measures is not available for the poultry industry. Globalization, international trade, and dramatic increases in the demand for animal protein for decades to come may magnify these concerns from both practical and ethical perspectives and thus create a need for objective debates [5]. Many developing countries rely on

animals for their livelihoods so improving their welfare is crucial. It is an integral part of an ideal sustainable system cause an efficient production system can not be based on keeping unhealthy, underfed animals.

#### *Natural behaviour of chickens*

- i. Wing flapping:
- ii. Dust bathing: Keeps chickens feathers and skin in healthy condition.
- iii. Exploring: By exploration birds acquire information about the surrounding environment.
- iv. Exercising: Normal movements causes stresses and strains to bone and muscle that keep the skeletal system healthy.
- v. Scratching and foraging: They have natural urge to foraging and scratching.
- vi. Nesting: They have strong maternal instinct so highly motivated to gain access to a nest site when they are about to lay an egg.
- vii. Roosting and perching: Important to avoid injury from more aggressive flock mates.

#### *Welfare issues of layers*

The commercial laying hen produces more than 300 or more eggs a year; in contrast, their ancestral parent species, the jungle fowl, lays 4 to 6 eggs per year (Natural Encounters Inc., 2006). Unnaturally high level of productivity is metabolically taxing, often causing hens to suffer from "production diseases," including osteoporosis and accompanying bone fractures, and can lead to reproductive disorders. Research suggests that the problem of osteoporosis may be worsening, possibly due to industry's continuous push toward maximizing productivity.

#### *The welfare issues of layers are:*

- 1) Behavioral restriction
- 2) Housing
- 3) Mutilations

- 4) Forced molting
- 5) Disposal of spent laying hens

#### *Behavioural restriction*

In cages hens are so intensively confined that they have no opportunity to exercise so, lack of exercise in cages leads to bone fragility and impaired bone strength and also detrimental to the psychological well being. Dust bathing deprivation leads to stress because it is pleasurable activity of birds. Caged hens prior to oviposition are restless, show stereotypic spacing and escape behaviour. The lack of appropriate foraging substrate may lead to redirected pecking and to the development of abnormal feather pecking.

#### *Housing*

##### *Types of housing:*

- Free range
- Semi-intensive
- Intensive
  - i) Deep litter
  - ii) Cage system
    - a. Reverse cages
    - b. Battery cages
    - c. Flat deck cages
    - d. Furnished cages

Free-range birds with shelters are able to express additional behaviors such as freedom of movement, running, flying, and the scratching of soil, and have the opportunity to be exposed to a wide variety of environmental stimuli. [6]

The traditional cage is the most common housing system because of the advantages of a more disease-free bird (e.g., prevention of coccidiosis; [6,7] , less bird aggression and cannibalism and stress with smaller group sizes of 6 hens or less, less ammonia and dust providing an improved environment for birds and workers [8,9], , ease of bird inspection [10] , cleaner eggs and economics [11] compared with alternative housing systems such as deep littered housing.

The major welfare shortfalls of traditional cages is that hens are not able to express normal behaviors such as nesting, dust bathing, foraging, perching, scratching needed to prevent broken claws [12] , wing flapping, stretching, body shaking, walking, running, and freedom of movement and escape leading to inappropriate behaviors such as repetitive stereotypic (e.g., pacing before oviposition) and vacuum activities (e.g., hens going through the motions of dust bathing. [13]

#### *Managemental practices to improve welfare of layers in housing*

Opportunities to improve welfare include the elimination of practices such as backfilling cages with different aged birds to maintain a full house. Bird welfare is compromised when backfilling is done every month to replace mortality. Research has shown that mixing birds of different ages or from other flocks increases susceptibility to disease, it should be avoided. Selection for less cannibalism [13] and feather pecking osteoporosis. [14] Benefits of environmental enrichment include reduced aggressive behavior and improved livability, feather condition, and egg production. [15] Fearfulness is reduced by use of objects such as rattles, balls, colorful plastic bottles, strings or drawings on the wall. [16] Installation of a solid side partition consisting of sheet metal or plastic rather than a wire partition reduces feather damage due to wear and pecking between cages by 15 to 20%. [17]

Cages modified with enrichments of a perch, nest, claw abrasives, and dust bath offer opportunity for expression of bird behavior, hens show improved bone mineral density. [18] Redesign of furnished cages with egg collection closer to the darkest area of the nest box allows eggs to roll shorter distances thus reducing the incidence of broken shells. Behavioral studies indicate that 25 ppm of ammonia is aversive to laying hens. [19] To improve bird welfare and avoid keratoconjunctivitis and respiratory disease; [20], atmospheric ammonia should be kept below 20 ppm in poultry houses. [21] Use of genetic marker technologies should advance

the selection of birds with stronger skeletons and lesser cannibalistic and aggressive tendencies. [22]

#### *Mutilations*

The Animal Welfare Act 2006 defines a mutilation as “a procedure which involves interference with the sensitive tissues or bone structure of the animal, otherwise than for the purposes of medical treatment.”

The practice of beak trimming in the poultry industry occurs for over 60 yr. to prevent excessive body pecking, cannibalism, and to avoid feed wastage;[23] & this routine industry practice is usually undertaken at 1 d of age. It typically involves the removal of the upper, lower or both, mandible. After beak trimming, several anatomical, physiological, and biochemical changes occur in cut peripheral nerves and damaged tissues. [23,24]. The effect of beak trimming on bird well-being depends on multiple factors, including the amount of beak that is trimmed and the quality of the procedure.[25]. There are welfare concerns regarding beak trimming, and some countries including Norway, Sweden, Finland, and Iceland have banned its use. The commonly used methods for beak trimming are hot blade & infrared energy treatment and third i.e. Laser technique .

#### *Welfare concerns regarding beak trimming*

Loss of normal function (feeding, behavior, water intake & preening) due to reduced ability to sense materials with beak.

Significant decreases in activities such as feeding, drinking, environmental pecking, preening and head shaking.[26]. When beak trimming is performed at an early age, food intake and BW are significantly reduced during the first several weeks after treatment.[27] If the pin of the nipple drinker requires some force to displace it for getting a few drops of water, chick with sensitized beaks may avoid the nipple drinkers.

#### *Short -term pain & debilitation*

An injury discharge has been recorded from the intra-mandible nerve but the discharge is short lasting.[28] Another indicator of the short term stress was a significant increase in heart rate of debeaked hens compared with controls. [29]

#### *Neuromas & scar tissue*

A neuroma is a proliferative mass of Schwann cells and neurites (nerve processes) that may develop at the proximal end of a severe nerve. Scar tissue was also identified adjacent to the mass of regenerating nerve fibers.[30]

#### *Long term pain*

The presence of neuromas and spontaneous discharges near the tip of trimmed beaks were presented as evidence of long-term pain.

#### *Management to improve welfare during beak trimming*

In response to welfare concerns, several management techniques, such as reducing light intensity or modifying housing environments, have been used to prevent feather pecking and aggression. However, these methods have limited success and provide no guarantee of controlling feather pecking. [31] It has been known for some time that beak trimming at a young age (i.e., d 1) is preferable because it is less stressful, has better production outcomes, and results in the formation of fewer neuromas in the beak.[23]

One substitute is an infrared beak treatment (IR-BT), which is purported to have a less negative effect on well-being than HB-BT in broiler breeder chicks.[32]

One of the perceived advantages of this method of trimming relative to HB-BT is the elimination of open wounds and potential bleeding sites that may lead to inflammation,

infection, and pain. No occurrence of open wounds was recorded for birds in the IR-BT treatment.[31]

#### *Forced molting*

*Definition:* Molting is a natural biological process of all birds to renew their feathers, but molt induction is a contentious practice because of the methodology used. Normally wild chickens molt once a year and it requires about 4 months for a hen to drop her feathers & grow a new set. The artificial program takes 6-8 wks. Methods to induce forced molting.

- 1) Water withdrawal
- 2) Feed withdrawal
- 3) Light reduction

Feed deprivation is most common method used in India & other countries except European Union which has already banned this practice Molting by feed withdrawal has received a great criticism from animal welfare activists.

#### *Welfare implications of forced molting*

Hunger is an extremely powerful motivation & chickens have evolved to forage & consume food throughout the day. Food deprivation results in a classical physiological stress response. Frustration of feeding leads to signs of extreme distress such as increased aggression formation of stereotyped pacing & stereotypic pecking. Forced molting is stressful leading to increased mortality during the first 2 wk of molt. [10] Decreased skeletal integrity. Increase in salmonella organisms in the environment of molted compared with non molted flocks.

#### *Managemental practices to improve welfare*

Development of effective alternative methods of molting that never demand starvation is essential to replace the existing method. Central Avian Research Institute in collaboration with department of biotechnology has been researching on this issue.

#### *Non feed withdrawal molting regimens*

In a field trial with Ad.lib feeding of diet, high in corn gluten wheat middlings, corn or combination of 71% wheat middlings & 23% corn, showed 40% lower mortality when molting induced by wheat middlings alone. Diet with increased zinc acts on the appetite centers located in the brain which causes the birds to reduce their feed intake which in turn precipitates the molt. 25 kg Zinc oxide containing 73% zinc to a ton (2000 lb) of feed that contains 3.5% Ca and drugs viz. Methalibure, Enheptin, Progesterone, Chlormodione, and Iodine resulted in increased resistance to salmonella. livability & improved skeletal integrity. This suggests that non feed withdrawal methods of molting may be more welfare friendly than the more conventional feed withdrawal molting regimens.

#### *Disposal of spent laying hens*

The 74 wks old hen either sent for slaughter as spent laying hens or force molted and kept for a second laying year.

#### *Welfare concerns*

*Fragile skeleton:* 20% of hens from battery cages have freshly broken bones just before stunning. [33]

*Poorly designed cages:* Small doors of cages results in hens getting limbs caught as they are being removed. 25% caged hens suffered broken bones during removal from cages. [34]

*Low value:* Only a few processing plants are prepared to accept spent hens, so long journeys require to reach processing plants.

#### *Management to improve welfare*

Cages should be designed so that the whole front opens up, lead to lower risk of damage. [35] Use portable CO<sub>2</sub> gas stunning and killing cabinet. [36] Development of light body weight hybrid strains.

*Welfare issues of broiler*

- 1) Behavioral restriction
  - 2) Feed restriction in broiler
  - 3) Stocking density and group size
  - 4) Catching ,transport & slaughter
- 1) Behavioural restriction

*Feed restriction in broiler*

To prevent health and fertility problems associated with excessive weight gain, broiler breeders are severely feed restricted during rearing, which may affect welfare. Under commercial conditions broiler breeders are feed restricted during rearing to limit growth rate, and they may receive one small meal a day or be fed once every 2 days .[37,38]

*Welfare implications of feed restriction*

**Frustration and stress Ascites:** It is the condition in which rapidly growing broiler chickens do not have the heart and lung capacity needed to distribute oxygen throughout the body .[39] Symptoms include accumulation of fluid in the abdominal cavity, an enlarged flaccid heart, shrunken liver, lameness, heart failure and mortality

*Stocking density and group size*

Deterioration of footpad and hock condition and increased stress are important welfare concerns in high-density broiler production. Their tibias were also longer and less symmetric in length.[40]

Lameness is considered to be one of the more serious welfare problems facing the broiler industry. It is known to be related to a range of issues including tibial dyschondroplasia [41], general leg weakness[42], and severe footpad dermatitis. It has also been connected to an overall lack of activity.[43] Aside from the welfare implications, footpad dermatitis can also have adverse effects on production because damaged feet cannot be sold and affected broilers may take longer to gain weight. The detrimental effect of high density was especially

pronounced at 18 birds / m<sup>2</sup> .[40] Crowding cause poor walking ability . [44] thigh sores and scabs, and scratches on the back from birds walking over one another .[45] hock and foot-pad dermatitis, lesions on the back of the legs and feet, respectively, which may be superficial or progress into deep ulcers may also develop indirectly by deteriorating litter quality. Air quality continues to deteriorate at even higher stocking densities, and, when overcrowded, broiler chickens may experience more bruising and heightened fearfulness, Rest is important for young, growing animals, and crowding also increases the frequency with which birds disturb and walk over each other, interrupting resting patterns.

*Catching, transport & slaughter*

There are severe welfare problems associated with pre-handling, handling and transport of broiler chickens as assessed by many research workers. Transit birds are exposed to a wide variety of potential stressors such as the withdrawal of food and water, fractures, bruises, pain, stocking density, social disruption, transport micro-environment, motion, acceleration, vibration, noise and restriction of behavior. When birds raised for meat reach market weight, they must be caught and crated for transport from production facilities to slaughter plants. Chickens are typically carried inverted by a single leg, three or four birds per hand before they are put into transport crates. Fasting before and during transportation is a major stressor. Manual catching, as well as handling and loading for transportation, have been identified by researchers as “major sources of stress and trauma to the birds.” . [46]

*Issues related to welfare during slaughter*

- *Uncratering:* Moreover, hanging upside-down is a physiologically abnormal posture for chickens. Handling, inversion, and shackling are traumatic and stressful, as reported in multiple studies that measured physiological indicators of stress. Because of this, approximately 90%

of birds flap their wings vigorously which may lead to dislocated joints and broken bones.

- *Pre-stun shocks*: Some birds inadvertently experience painful electric shocks prior to being stunned in the electrified water bath. This can happen when a bird's leading wing makes contact with the water before the head or if wing-flapping occurs at the entrance to the stunner.
- *Ineffective stunning*

#### *Management to improve welfare*

Automated catching machines -14% decrease in bruising among birds caught by machine significantly lower incidences of leg and wing fractures and dislocations: Leg, wing, and rump injuries were 50%, 22%, and 27% lower, respectively, and the percentage of birds with one or more injuries was 30% lower than those caught manually. [47]

Newer systems, including Controlled Atmosphere Stunning (CAS) and Controlled Atmosphere Killing (CAK) methods employing naturally occurring gases, are increasingly seen as better alternatives for improved animal welfare, worker conditions, and carcass quality.

#### *Animal welfare organizations & acts*

During the nineteenth century animal welfare organizations came into being. The first such organization in the world, the Society for the Prevention of Cruelty to Animals (SPCA) was formed in 1824 by Arthur Broome in England and became the Royal SPCA (RSPCA) in 1840 as a result of the patronage of Queen Victoria.

The organizations working for animal welfare are:

- People For Animals (PFA) – India's largest organization
- International Fund For Animal Welfare (IFAW) One of largest animal welfare & conservation charities in the world.
- World Society For The Protection Of Animals (WSPA)

- People for the Ethical Treatment of Animals (PETA)
- Farm Animal Reform Movement (FARM)
- In Defense of Animals (IDA)- 1996
- National Institute of Animal Welfare (NIAW) in Ballabhgarh, Haryana
- Pet Animal Welfare Society (PAWS)-1998
- Society for animal protective legislation (SAPL)
- World Organization For Animal Health (OIE): In 2004, the OIE integrated animal welfare as part of its Terrestrial Animal Health Code and has published the OIE Guiding Principles on Animal Welfare (OIE, 2004).
- Animal Welfare Society: The animal welfare society was conceptualized in 2004. It is recognized by the Animal Welfare Board of India.
- Animal Welfare Association: The animal welfare association is an organization, which is a home to most of the orphaned animals. Every year, almost 9,500 animals receive care from animal welfare association.
- Animal Welfare Organizations: It is spread all across India, and they are doing a commendable job as far as animal welfare is concerned.
- Animal Welfare Board of India: It was established by Central Government. The Animal Welfare Board of India has over 2500 organizations registered with it which are involved in the field of animal welfare."
- There is one bird welfare organization "ASHA FOUNDATION" at Ahmadabad.

There are also various welfare laws and acts passed, across the world to protect animals against ill treatment. The Prevention of Cruelty to Animals (PCA) Act 1960 (59 of 1960) was enacted in December 1960 with the object of preventing infliction of unnecessary pain and suffering to animals. The Animal Welfare Board of India (AWBI) had formulated a draft Animal Welfare Act, 2011, and submitted it to the



Ministry of Environment and Forests to replace the outdated Prevention of Cruelty to Animals Act, 1960. Apart from this, there are various NGO's working for animal's rights, animal's protection and also their well being.

#### *Impact on food availability & safety*

Within this global scenario, a major challenge for all parties ought to be implementing a "clean, green, and ethical" animal agriculture, while guaranteeing that food is produced under high animal welfare standards. The industry and producers in the developed countries have followed the animal welfare "rules"; in some instances, this is due to legislation and penalties they can be subjected to, while in other cases, there is a genuine concern about animal welfare and potential implications on productivity .[5]

The fast-food retailers realized very quickly that they were in a public relations battle for the hearts and minds of consumers, one that involves convincing people of the moral acceptability of their products. In 2000, McDonald's Corporation announced that it had established an animal welfare program with specific requirements that it intended its suppliers to meet. Shortly thereafter, Burger King, Wendy's International, and Kentucky Fried Chicken introduced similar animal welfare programs.[48] That improvements in farm animal welfare can often improve productivity and food safety, and hence lead to economic benefits.

#### **Conclusion**

Keeping animals well nourished, free from discomfort, pain and stress are essential to sustain a good welfare state. Though it is must to increase production for fulfillment of our need but it's our prime duty to avoid suffering of animals as part of humanity. Poultry welfare improves health and maximizing efficiency which resulted in meat and poultry products that are affordable for all sector of society so poultry welfare issues be included in future

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