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Issues of Poultry Welfare: in context to developing Countries like India

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The poultry sector is one of the most rapidly growing livestock sectors worldwide. Although industrialized countries have much higher average per capita consumption of most poultry products, production in developing countries is increasing rapidly. According to World Organisation for Animal Health (OIE), the definition of animal welfare refers to how well an animal can cope with the conditions in which it lives. During the last few decades increasingly sophisticated interest in the welfare of farm animals has developed. At the same time there has been a move towards more welfare-friendly housing systems like loose housing systems and stables with deep litter for dairy cows, group housing for pregnant sows, and large floor systems with access to outdoor facilities for laying hens. These so-called welfare-friendly housing systems provide generous space and other conditions which encourage animals to express their natural behaviour. In some countries, government subsidies for farmers are linked to guarantees of high welfare standards on the farm and interest is only driven by export opportunities for poultry meat, especially to Europe. In many countries, meat and other animal products coming out of welfare-friendly housing systems are sold at a higher price than alternatives which have been 'conventionally' produced. But this is yet to be recognised in India.

Five Freedoms

The Five Freedoms outline five aspects of animal welfare under human control. They were developed in response to a 1965 UK Government report on livestock husbandry.

The five freedoms as currently expressed are

a) **Freedom from hunger or thirst** by easy access to fresh water and a diet to maintain full health

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and vigour.

b) **Freedom from discomfort** by providing an appropriate environment including shelter and a comfortable resting area.

c) **Freedom from pain, injury or disease** by prevention or rapid diagnosis and treatment.

d) **Freedom to express (most) normal behaviour** by providing sufficient space, proper facilities and company of the animal's own kind.

e) **Freedom from fear and distress** by ensuring conditions and treatment which avoid mental suffering.

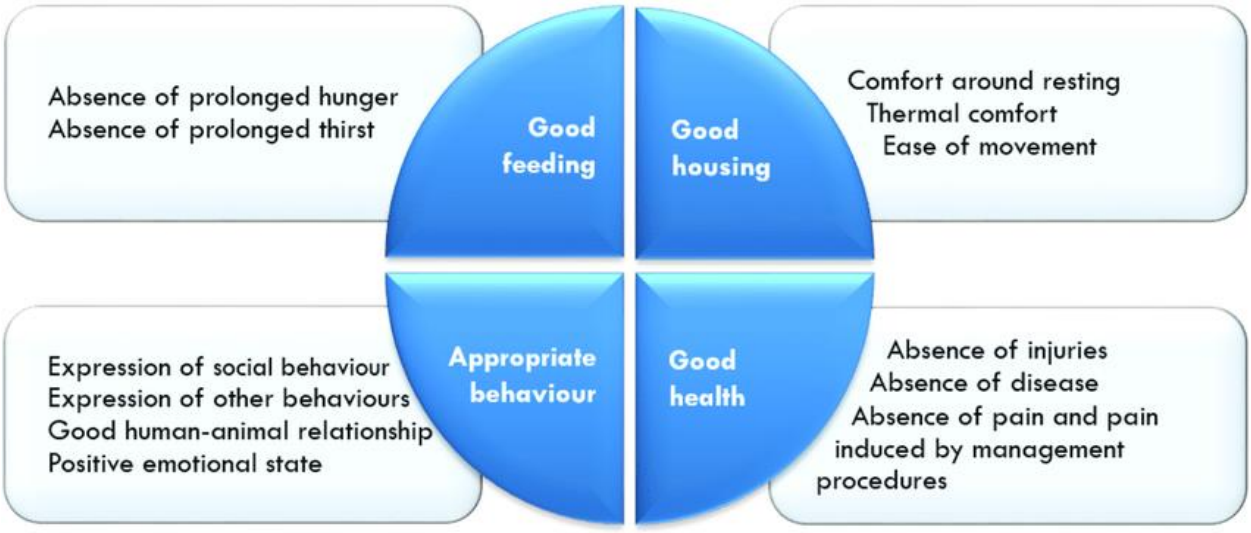

Figure: Welfare principles and criteria as defined by Welfare Quality

As the welfare issue related to Poultry is recently raised and its prevalence in India is still at infancy stage. A broad range of indicators can be used to assess the welfare of poultry. The major welfare indicators based on outcomes are discussed separately for broiler and layer birds.

Welfare issues in commercial egg production

- **Osteoporosis:** Osteoporosis in laying hens is a major welfare concern. It is the progressive loss of structural bone throughout the skeleton, which results in weakened bones. Weakened bones can lead to a high number of birds suffering keel, leg and wing fractures, which are likely to be painful. Osteoporosis can also cause birds to become paralysed, which can lead to death. Nutrition also appears to affect bone strength, and the effects of osteoporosis can be minimized by providing sufficient calcium, phosphorus and vitamin D in the diet. Another contributor to

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the severity of osteoporosis is genotype. Fleming et al. (2006) found significant improvements in bone strength when birds were housed in aviaries, rather than battery cages

- **Keel fractures:** One consequence of osteoporosis is that it greatly increases the susceptibility of bones to damage and fracture. In laying hens, the bone most likely to sustain a fracture is the keel bone, which can be damaged in two main ways: i) by misjudged landings when birds are perching or nesting in a furnished environment; or ii) when birds are handled during depopulation at the end of lay. The incidence of keel fractures caused by furnishings is higher in non-cage systems than in cage systems. In free-range and single tier aviary systems (barns), the mean prevalence of bone break ages is 65 percent, 90 percent of which are keel bone breaks (Wilkins et al., 2004).
- **Behavioural restriction:** The importance of providing nests, perches and pecking areas stems from the natural behaviour of chickens. In the wild, poultry have the ability to build nests, scratch and peck, dust-bath and perch. These are all behaviours that have not been lost through genetic modification of poultry breeds and they are still important for good welfare of modern-day laying hen (Weeks and Nicol, 2006). In conventional cages, it is virtually impossible for hens to perform these behaviours. Hens also need at least 600 cm^2 each to be able to stretch their wings and perform other comfort movements. Furnished cages do not allow birds total behavioural freedom, but they do allow birds to perform their most important behaviours to a degree not possible in conventional cages.
- **Injurious Pecking:** Injurious pecking in laying hens is a major welfare concern that can spread through flocks, resulting in pain and high mortality. Injurious pecking can occur in all types of layer hen housing. In cage systems persecuted birds are unable to escape, but the problem tends to be confined to particular cages. In non-cage systems, once injurious pecking starts it can spread rapidly throughout the whole flock. Injurious pecking comprises feather pecking, vent pecking and cannibalism.
    - Gentle feather pecking occurs when one hen pecks at the feathers of another, without pulling or removing the feathers. Severe feather pecking occurs when feathers are pulled violently or removed. This has an economic impact on production, as birds lose energy and heat and therefore consume more food. Feather pecking is likely to be very painful for the affected hens, and may lead to cannibalism. The risks of feather pecking can be reduced by feeding mash rather than pelleted diets; providing additional foraging and fibre sources, such as chopped straw and vegetables; and ensuring good litter condition, to encourage birds to peck the litter rather than

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each other. Reducing light intensity is a short-term measure that does not address the cause of the problem.

- Cannibalism occurs when the flesh or blood of another individual of the same species is consumed. It is a common problem in poultry, particularly laying hens. The incidence of feather pecking and cannibalism can be reduced by beak trimming, which involves removal of up to two-thirds of the upper beak. Beak trimming has been banned in several countries, so an alternative is needed. Providing birds with enrichment, such as litter to peck at, may reduce frustration. It is also important to provide pullets with litter in their rearing environment.

Mitigation Strategies: The following are some important practical tips for avoiding welfare problems:

- Avoid conventional unfurnished cages, as these cannot provide good welfare for laying hens.
- If using a cage system, use furnished cages with at least 600 cm2 of floor area per bird and a nest area.
- Produce plans for preventing or coping with emergencies such as equipment breakdown or fire.
- Inspect flocks at least twice a day and check individual birds, even in cage systems where it can be difficult to observe individual birds at the back of a cage. At monthly intervals, catch samples of birds to look more closely for problems such as mite infestations or vent pecking.
- Keep good records of mortality and the causes of mortality. Record spontaneous mortality separately from culling figures.
- Seek veterinary advice if birds show signs of sickness. There are many links between poor welfare and poor health/disease. Improving one can often improve the other.
- If possible, obtain birds from rearing units close to the laying farm, as this will minimize stress during transfer. The new laying flock will settle more easily and early egg production is likely to be improved.
- Do not bring the flock into lay too early. Onset of lay at 17 or 18 weeks is associated with a greater risk of vent pecking than onset of lay at 19 weeks.
- Do not place perches at heights that permit one bird to peck another bird’s vent.
- The use of mash rather than pelleted feed allows the hens to spend a longer time feeding, and reduces the risk of injurious pecking.
- The provision of good, dry litter to a depth of at least 10 cm is vital for the good management of hens in non-cage systems.

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- For birds in non-cage systems, provide a raised slatted or wire mesh area separate from the litter area. Do not provide high perches, which are associated with "crash-landings" and subsequent bone fractures.
- In non-cage flocks, the risk of injurious pecking can be reduced by ensuring that the litter area is kept dry and friable. Add fresh litter regularly and, if possible, provide hens with additional pecking materials, such as straw or other dry vegetation.
- If the birds have access to an outdoor range area, encourage them to go outside as much as possible, by providing areas of shelter (from sun or rain) on the range. This reduces the risk of injurious pecking in the flock.
- Birds should have at least eight hours of light and at least six hours of dark in every 24-hour period, and light levels should not be less than 10 lux.

Welfare issues in commercial Broiler production

- **Leg health**: The incidence of leg disorders is a major issue in broiler production and often leads to lameness. Out of several causes of lameness in broiler chickens, broadly divided into infectious and developmental causes (although the two are interrelated) one of the main factors contributing to both types of leg problems is genotype. Through intensification of production and genetic selection over the last 50 years, broiler growth rates have increased from 25 g per day to 100 g per day – a 300 percent increase. This rapid growth places stress on the skeleton, resulting in skeletal abnormalities; which can be due to valgus varus deformation, ruptured tendons, separation of the proximal epiphysis, bending and rotation of the tibia, osteochondrosis, degenerative bone disease and microfractures. It has also been established that rapid growth increases the risk of a range of infectious leg conditions including arthritis and tenosynovitis. Environmental and management factors that increase the risk of chickens developing lameness include diet, lighting regime and antibiotic use (Knowles et al., 2008). Lameness is not the only leg problem affecting broiler chickens. Contact dermatitis (pododermatitis) appears to be increasing in prevalence in some countries. Signs of contact dermatitis include the appearance of lesions, ulcers or scabs on the footpads, hocks or breast. In severe cases, extensive areas of skin may turn black. This results from these parts of the birds' bodies being in prolonged contact with irritant substances derived from faeces, such as ammonia. Lesions can act as a gateway for bacteria, which may spread through the bloodstream and cause joint inflammation.

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- **Metabolic Disorders:** Major issues result from a very high metabolic rate, efficient feed conversion and rapid growth. Rapid growth places pressure on poultry's internal organs. This can lead to cardiovascular diseases, the most prevalent of which are ascites and sudden death syndrome. The condition appears to be more prevalent at high altitudes, although it affects birds nationwide.
- **Hunger in broiler breeders:** When considering the welfare of broilers, it is important to consider all stages of production. The welfare of broiler breeders is often compromised by routine feed restriction. To compensate for the negative effect of selection for growth rate on reproductive performance, food is restricted during both the rearing and the laying phases to prevent birds from becoming too fat and heavy, which would compromise egg production and fertility. These birds are almost certainly experiencing extreme hunger, at least during the rearing phase, when they are often given less than half of their voluntary food intake.

Mitigation Strategies: The following are some important practical tips for avoiding welfare problems:

- Produce plans for preventing or coping with emergencies such as equipment breakdown or fire.
- Inspect flocks at least twice a day, and check individual birds. Check that all birds can move freely with gait scores of less than 3 (gait scores are described in Knowles et al., 2008).
- Check that there are no signs of breast or leg lesions. Such symptoms are usually associated with wet and dirty litter. If lesions are apparent, take steps to improve litter condition and ventilation.
- Keep basic records detailing the number of birds in the house, maximum and minimum temperatures, etc.
- Keep good records of mortality and the causes of mortality. Record spontaneous mortality separately from culling figures.
- Birds that cannot move sufficiently well to have easy access to feed and water should be culled, as they are unlikely to recover and culling will prevent them from experiencing further suffering.

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