Review Article

OVERVIEW OF THE STRAY ANIMAL IN INDIA AND THEIR REGULATION

Abstract

Overpopulation of stray animals is a significant public health and animal welfare issue in India. Neglected zoonotic illnesses spread through stray animals and humans, especially in low- and middle-income nations. Stray animals often breed uncontrolled because they do not rely on humans for food or shelter. Uncontrolled stray animal breeding increases their population, increasing the risk of predation, road traffic accidents, and the transfer of zoonotic diseases, making them vectors for certain diseases. Stray animal population management strategies vary based on the situation and type of animals. These methods include contraception, trap-neuter-return, poisoning, euthanasia, and gun firing, among others. To properly monitor and control the stray animal population, it's vital to educate the community about the challenges that free-roaming animals cause and provide methods to alleviate them.

Introduction

Dogs are the first species to be domesticated, and they have a close cultural, social, and economic relationship with humans. Pets are viewed as family members in the Western culture, and nearly half of homes maintain pets. Domesticating dogs has been proven to give several benefits to humans. It has been found that pet owners visit their doctor less frequently, use fewer prescriptions, and have lower blood pressure and cholesterol levels than non-pet owners. Dogs have important roles in the treatment of numerous psychological, mental, and biological disorders in humans. However, dog domestication, particularly the abundance of stray dogs, can have detrimental consequences for public health and animal welfare.

Stray animals are unowned, free-roaming, homeless, abandoned, or street animals, particularly domestic pets like cats and dogs (Abdulkarim et al., 2021), these animals are termed strays in underdeveloped nations. Stray cats and dogs in

developed nations may be placed in animal shelters or pounds for care (Voslarova and Passantino, 2012).

Stray animals pose a significant public health concern for both their well-being and society. Concerns about stray animals interacting with humans, particularly youngsters, have been raised in several nations (Slater, 2001). Certain animals can harm children with bites and scratches, as well as spread zoonotic diseases. Interactions between people and animals have been widespread for ages. Dogs serve multiple roles in society, including pets, guardians, crime detectors, runners, and champion hunters. Cats are also maintained as pets and utilized to hunt rodents and reptiles that cause property damage (Bernstein, 2007).

It is critical to develop a long-term and sustainable strategy for dealing with stray animal populations. The objective is to protect people from these animals while also ensuring the welfare and health of the animals. Experiences with stray animal control reveal that effective control methods need the use of multiple strategies. Among the tactics, Western civilizations' concept of "ownership" is the most common. The OIE's 2019 approach prioritizes owner education, mandatory registration and identification, environmental management, pet reproductive control, and regulated breeding and marketing to manage animal populations. All of these regulations should be governed by effective and enforceable law.

In India, livestock owners frequently leave cattle who have reached the end of their productive life or are ill. As a result, these animals are either left to roam the streets or cared for by neighborhood gaushalas (cow shelters or cattle pounds) (Kennedy et al., 2018). Every year, an estimated 7.6 million pets enter animal shelters worldwide, with 3.4 million being cats and 3.9 million being dogs (Statistics-National Kitten Coalition, 2020). The World Health Organization (WHO) believes there are 300 million stray dogs globally. The abundance of free-roaming dogs varies substantially within and between countries.

Source of stray animals

1. Stray cattle

Stray cows or stray cattle are animals that roam freely, including cows, bulls, oxen, and buffaloes. A cow is deemed "stray" when its owner no longer claims

ownership or when its owner cannot be identified. When a cow stops producing milk, feeding and maintaining the cow becomes a financial burden for the farmer, who cannot afford to keep it. Cattle that farmers cannot sell are eventually abandoned. Stray cattle are rarely an inconvenience to traffic in cities and rarely cause road accidents.

2. Stray dog

Many factors have been identified as influencing roaming dog populations, including habitat type (urban/rural), human population density, and cultural/social influences (Macpherson et al., 2002). Most dogs are classified as strays because their owners abandoned them for a variety of reasons, including family migration, disease, and difficult physiological behavior in pets without access to medical care or feeding (Lyu, 2015).

3. Stray cat

Many stray cats wander the streets and are occasionally found in restaurants, campuses, places of worship, and landfills hunting for food (Legge et al., 2017). Old dogs and cats typically live alone, produce offspring uncontrollably, fill up the environment, and frequently cause difficulties and global issues for public health and environmental safety (Voslarova and Passantino, 2012).

Cats reach sexual maturity at about 5-6 months of age. Because of their high reproductive potential, it is difficult to quantify the total number of stray cats in a community. Despite significant mortality rates, the cat population can be sustained (Stoskopf and Nutter, 2004). Early sexual maturity, polyestrous cycling, and multiparous pregnancies all contribute to the cat population's abundance (Kutzler, 2007). Cats are highly adaptable and may flourish in a variety of situations, including villages, towns, and metropolitan areas (Legge et al., 2017).

Population of stray animals in India

The total stray cattle population in India 3.2% decrease from the previous census is 5021587 of which 4348873 are rural population and 672714 are contributed by urban areas. As well as in Rajasthan total stray cattle population is 1272277 in rural and urban areas contributing 1154225 and 118052, respectively.

The total stray dog population in India 10.67% decrease from the previous census is 15309355 of which 12789767 are rural population and 2519588 are contributed by urban areas. As well as in Rajasthan total stray dog population is 1275596 in rural and urban areas contributing 1128686 and 146910, respectively (Statistics -2019).

Major disadvantages of stray animals

1. Impact on community

Predation, traffic accidents, defecation, urine spraying, harassment, running and fighting during breeding, scavenging on open litter, attacking people (as in the case of a rabid dog), dirt, and threatening domestic animals by attacking and biting are some of the major issues associated with the impact of stray animals on the community. Domestic animals' behavior is largely influenced by their owners, whether they be individuals or a society. According to Taylor et al. (2017), pet owners play a crucial role in managing their pets' behavior in communities and settings. Some owners may not have the financial resources to care for their animals. These may represent a risk to communities since they are unable to ensure the animal's welfare.

2. Impact on public health

Public health has a significant impact on stray animal populations in both rural and urban regions, leading to the spread of zoonotic illnesses. According to Robertson (2008), disease transmission from stray animals to humans and cattle is influenced by factors such as country, climate, and population density. Understanding the impact of stray animals requires a focus on public health and epidemiology disciplines. Public health and epidemiology play a crucial role in understanding stray animal population control, including demographics, strategies, issue categories, and necessary assessments (Slater, 2001).

Stray animals in rural and urban areas have an impact on public health by causing the emergence and spread of several zoonotic diseases (Abdulkarim et al., 2021). Zoonotic disorders of public health concern that can be transmitted to humans via stray dogs and cats include brucellosis, toxoplasmosis, rabies, campylobacteriosis, leishmaniasis, bartonellosis, salmonellosis, pasteurellosis, and leptospirosis, among others (Ghasemzadeh & Namazi, 2015).

3. Impact on disease transmission and ecology

Stray animals can spread diseases to humans and domestic animals due to pollution in their surroundings. Poor environmental hygiene, contact with feces (Traversa et al., 2014), urine, and other excretions from stray animals, or infected or contaminated foods and food products obtained from diseased animals such as milk, and poorly prepared meat and meat products (Seimenis, 2004) all contribute to these issues. Stray dogs and cats foraging for food near slaughterhouses may contribute to disease transmission.

In contrast to the health benefits provided by pet animals, stray animals contribute to environmental pollution, and dog bite incidence, and can act as reservoirs of many important zoonotic parasites (for example, Toxocara, Ancylostoma, and Echinococcus) through fecal contamination of soil and water, as well as infectious diseases (for example, rabies, salmonellosis).

Behavior of stray animals

Stray animals exhibit behavior similar to that of regular animals but with greater refinement and selectivity due to their ability to adapt to their surroundings. Stray animals typically favor soft, loose bedding. They often prefer construction-grade sand bedding. They prefer kaccha roadside beds over pakka roads but prefer raised metal road surfaces during and after rainy seasons.

Stray animals may choose to sit on the garbage-damping ground due to its soft surface. During winter, cows tend to stay around roadside garbage fires started by locals to prevent exposure to low temperatures. Animals exhibit nine behavioral systems, including ingestive, eliminative, sexual, caregiving, care soliciting, agonistic, allelomimetic, shelter-selective, and investigative/exploratory.

Ethics and animal welfare issues related to stray animal population control

To address ethical difficulties and the welfare of stray animals, various things must be considered, such as feeding, shelter, health care, and, in some cases, human interaction (Briggs, 2013). Neutering stray animals improves their health and body score, reduces roaming, and makes them sociable. It was also discovered that some young of strayed animals die or disappear after a few months of birth due to abuse from children or other stray animals, malnutrition, disease, or a mobile accident (Stoskopf and Nutter, 2004).

The welfare of stray animals can vary significantly. Some societies believe that eliminating stray animals is more humanitarian than letting them live a wretched life.

When it comes to humane stray animal population reduction, one strategy does not match all conditions because they differ (Stoskopf and Nutter, 2004). Campaigns to educate and enlighten the public about domestic animal ownership obligations, as well as the impacts and consequences of abandonment, should be addressed regularly (Param S., 2016).

Animal welfare agencies are organizations that care about the health and well-being of animals (domestic, wild, and stray). Some of these organizations include the American Society for the Prevention of Cruelty to Animals (ASPCA), the Humane Society of the United States (HSUS) (Rowan and Kartal, 2018), International Fund for Animal Welfare (IFAW), Animal Welfare Institute, Animal Welfare Organization, Ipoh Society for the Prevention of Cruelty to Animals (ISPCA) (Param, 2016), World Animal Protection (WAP), International Animal Rescue, Global Alliance for Rabies Control, and National Animal Welfare Trust. These organizations seek to control stray animal populations by creating and implementing proper regulations governing humane animal population control and providing animal-control facilities. This includes sterilizing all adopted animals. And the procedures require proper training, surveillance, and dedication from the staff and volunteers (Fournier and Geller, 2004).

The ethical approach to stray animal population control, takes into account both human and animal welfare. The human welfare perspective typically focuses on the spread of zoonotic illnesses and other consequences caused by stray animals. The animal welfare concept is based on the assumption that disease and mortality in unmanaged populations of stray animals create suffering that outweighs the associated control programs (Kathy, 2006). These ideas are influenced by various perspectives on essential values such as pain, freedom, and the presence of stray animals. The most common ethical approach to resolving this issue is to humanely kill stray animals (mainly euthanasia) or to control their reproduction (sterilization or neutering, OIE, 2019).

Historically, mass culling of dog populations was used to control rabies in India, but this has been replaced by animal birth control (ABC) programs under the Prevention of Cruelty to Animals Act of 1960 and the Animal Birth Control Rules of 2001 (http://envfor.nic.in/legis/awbi/awbi13.pdf, accessed on March 15, 2019). Street dogs in an ABC program are sterilized, vaccinated for rabies, and then released back into the same neighborhood where they were seized. The ABC program has been adopted in small portions of India with successful outcomes.

Governmental regulation for cattle

In June 2020, the Uttar Pradesh government enacted the Uttar Pradesh Cabinet Cow Slaughter Prevention (Amendment) Ordinance, 2020, which imposed maximum terms of 10 years imprisonment and fines of up to ₹5 lakh (US$6,300) for cow slaughter. The Adityanath ministry in Uttar Pradesh imposed a special 0.5% tax known as the "Cow Protection Cess" on eight government ministries, including the one that collects alcohol taxes.

Methods to control the proliferation of stray animals

1. Trap-neuter-return

This procedure involves trapping animals, neutering them, and returning them to their old habitat. Veterinary surgeons execute the surgery by spaying female animals or castrating male animals. Welfare organizations support TNR as a compassionate way to manage stray animal populations (Centonze and Levy, 2002). However, this system necessitates an ongoing surveillance and maintenance program, which can be costly.

The TNR method's expenses are determined by the resources allocated by stakeholders for problem management. DEWHA (2008) argues that the technique is costly, time-consuming, and requires a large number of qualified veterinary surgeons. Poor post-surgery treatment may lead to problems such as urine incontinence and an increased risk of cystic, hematologic, and osteo-tumors (Scott et al., 2002).

2. Contraception

The application of a drug, instrument, or treatment. When selecting contraceptive methods, consider efficacy, safety, availability, acceptance, and affordability (Bansode et al., 2019). Contraceptive agents come in various formats (pills or injections) and methods of usage. Hormone-based contraceptives, such as diethylstilbestrol, progestin, medroxyprogesterone acetate (MPA), proligestone (PROL), and mibolerone, change hormonal activity to induce contraception (Asa, 2018). Using an intrauterine device (IUD), such as Depo-proveras or Melengestrol acetate (MGA), can reduce the effectiveness of implants (Boutelle and Bertschinger, 2010). Trained veterinarians should implement most contraception techniques, except oral contraception.

Contraception has several benefits, including longer duration until reversal, fewer adverse effects, suppression of sexual behavior, ease of administration, low cost, and applicability to humans. The downsides of this strategy include the necessity for

repetition, swift reversal after discontinuing, slow initiation of activity in some medications, and the risk of injection site reactions (Cathey and Memon, 2010).

3. Euthanasia

The procedure is painless and causes quick unconsciousness, respiratory and cardiac arrest, and eventual death. The World Society for the Protection of Animals (WSPA) believes that euthanasia is a humane way to end the lives of pets and should only be performed by experienced specialists. WSPA recognizes the humaneness of euthanasia for animals suffering from illness, injury, or behavioral issues, but considers it harsh to employ it on healthy animals (Veikune, 2014).

Euthanasia (OIE, 2019) offers several benefits for controlling stray animal numbers, including painless death without cruelty, ethical acceptance worldwide, low-cost chemical agents, and little material requirements. The disadvantages of this method include the need for an expert to perform it (OIE, 2019), its difficulty for large populations, the use of chemical agents that may not always be available, the risk of sedation or complications for predators feeding on the euthanized carcass, and the need for a large volume of chemical agents, which can be costly (Purswell and Kolster, 200).

4. Poisoning

Poisoning has been one means of controlling the stray animal population. The most widely utilized drugs are anticoagulants and sodium monofluoroacetate (Sherley, 2004). Poisoning is a terrible practice that causes animals to die slowly and painfully (Robertson, 2008).

Poisoning is a cost-effective and labor-intensive way for controlling stray animals, making it ideal for large populations. However, it produces agonizing death, is brutal in comparison to other methods, poses a risk to non-target animals and humans, particularly youngsters, and has animal welfare issues (Mitchell, 2011).

5. Shooting

Shooting as a stray animal control method has several advantages, including being humane, target-specific, fast, and applicable to similar animals (Lyu, 2015). However, shooting requires a skilled and trained person, is dangerous to people and non-targeted animals, requires proper equipment, and may cause brain damage if the animal is shot in the head, especially for a rabid dog where the brain is required for the rabid test.

Conclusion

Stray animals should not be considered a burden on society. To preserve our indigenous breeds, it's important to manage them scientifically in specialized shelter farms. These breeds are resistant to heat stress, teak issues, and safeguard biodiversity, ultimately sustaining the ecosystem. Stray animal population control typically involves surgical neutering and non-surgical contraceptive procedures. Non-surgical approaches for regulating stray animals include immunocontraceptives and hormone-based contraception, whereas surgical methods include spying and castration of female and male animals. Other control methods include trap, neuter, return, euthanasia, poisoning, trap and relocate, and gun firing. The law should cover feeding, shelter, medical care (treatment and vaccination), management, welfare, and legal rights for stray animals. To effectively monitor and control the stray animal population, it's important to educate the community about the issues caused by free-roaming animals and propose solutions to address them.

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