International Journal of Bio-resource and Stress Management https://ojs.pphouse.org/index.php/IJBSM

Crossref

IJBSM February 2026, 17(2): 01-10 **Article** AR6583

Review Article *Natural Resource Management*

DOI: HTTPS://DOI.ORG/10.23910/1.2026.6583

Aging and Care and Management of Geriatric Pets

Payel Kar[1], J. B. Rajesh[1], Manas Das[2], Sherry Carelyne Marwein[1], Kh. Thanila Rose[3], Jashima Debbarma[1], C. Christen[1], Elone Lucy[1], Ankita Debnath[1] and Nitin Kumar[1]

[1]Dept. of Veterinary Medicine, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram (796 015), India

[2]Division of Medicine, ICAR- Indian veterinary research institute, Izatnagar , Bareilly, Uttar Pradesh (243 122), India

[3]Dept. of Veterinary Medicine, College of Veterinary Science, Khanapara, Guwahati, Assam (781 022), India

Open Access

Corresponding leovet@gmail.com

0000-0002-3752-4217

ABSTRACT

Aging is a normal biological process that affects all beings and is directly linked to longevity and age-related illnesses. It includes changes that are molecular, cellular, and organ-specific. As an animal ages, its organ systems degenerate, leading to a general decline in organ system function. One of the most significant risk factors for a variety of diseases, disabilities, and deaths in elderly pets is biological aging. The immune system, kidneys, digestive tract, and other organs are all gradually losing their ability to operate. The cardiovascular, renal, hepatic, musculoskeletal, ocular, and auditory systems are among the systems that are affected by aging. In older animals, a thorough check up that includes a blood test may identify a number of subclinical conditions that might be corrected with dietary changes. Anaemia, hypoalbuminemia, hypokalemia, elevated serum creatinine, or hyperglycemia in elderly pets may be signs of a number of diseases that can be treated with dietary changes as part of the care process. These conditions can be identified by routine haemato-biochemical testing. A thorough physical examination combined with a haemato-biochemical profile may reveal a number of age-related illnesses that can be treated early to prolong an animal's lifespan and lessen the effects of aging, this could be controlled early on and reduce the negative consequences of aging on animals, extending their longevity.

KEYWORDS: Aging, geriatric, nutrition, pets, physiology, disorders, care, management

***Citation* (VANCOUVER):** Kar et al., Aging and Care and Management of Geriatric Pets. *International Journal of Bio-resource and Stress Management,* 2026; 17(2), 01-10. HTTPS://DOI.ORG/10.23910/1.2026.6583.

Data Availability Statement: Legal restrictions are imposed on the public sharing of raw data. However, authors have full right to transfer or share the data in raw form upon request subject to either meeting the conditions of the original consents and the original research study. Further, access of data needs to meet whether the user complies with the ethical and legal obligations as data controllers to allow for secondary use of the data outside of the original study.

Conflict of interests: The authors have declared that no conflict of interest exists.

RECEIVED on 23rd July 2025 RECEIVED in revised form on 13th January 2026 ACCEPTED in final form on 04th February 2026 PUBLISHED on 11th February 2026

1. INTRODUCTION

Aging is not considered a disease. It is a natural occurrence that impacts all living beings. Aging is a biological process involving molecular, cellular, and organ-specific exchanges that may be directly linked to longevity and age-related diseases across all living organisms (Guo et al., 2022; Li et al., 2024). As a pet ages, it undergoes physical and metabolic changes that affect several body systems. According to the American Veterinary Medical Association (AVMA), dogs and cats are considered seniors when they reach the age of 7 years; however, this varies depending on the breed and size of the dog and cat. Eventually, these alterations result in diminished energy, heightened susceptibility to illness, and ultimately, demise. The multifaceted process of aging causes most organs and tissues to perform less well (Gardner, 2017; Barman and Barua, 2023). All dogs go through aging after reaching physical and sexual maturity. For many diseases that appear to be unrelated, such as neoplasia, osteoarthritis, heart disease, neurodegenerative disease, and many more, aging is the most significant risk factor (Guelfi et al., 2024). Diseases linked to aging have a serious negative influence on animal welfare and impose a heavy financial and emotional strain on the people who look after elderly dogs. A significant unmet need in veterinary preventive medicine would be addressed by reducing the effects of aging on morbidity, mortality, and quality of life (McKenzie et al., 2022). Pet animals in modern culture have longer lives than their ancestors because of better nutrition and health care. Over the past 40 years, dogs' life expectancy has doubled, whereas home cats live twice as long as wild cats (Grimm, 2015). Domestic dogs typically live between 6.7 and 12 years, with smaller dog breeds typically living longer. It is believed that larger breeds' faster development rates and higher levels of hormones like insulin-like growth factor make their bodies more prone to illness and hasten the aging process (Cozzi et al., 2017). The species and breed of pet animals have effects on age calculations. At 7 years old, small-breed dogs are considered geriatric, while larger-breed dogs are considered geriatric at 6 years old. Cats between 7 to 11 years of age are regarded as geriatric. When an animal is in the final 25% of its breed's expected lifespan, it is generally referred to as geriatric (Rajapaksha, 2018). Growing older is a major contributing factor to several age-related illnesses in pets, including musculoskeletal issues, cardiovascular disorders, neoplasms, immune system issues, and neurodegenerative diseases. One of the most significant risk factors for various illnesses, disabilities, and death in geriatric pets is biological aging (Lazzaroni et al., 2020; Dias-Pereira, 2022). Like humans, dogs lose resilience and robustness as they age. Traditionally, the measurement of age is based on time. But an organism's chronological age-the amount of time it has been alive-is not the most accurate or practical indicator of how aging has affected a person's health, resilience, or robustness (its biological age) (Arbeev et al., 2016; Herzig et al., 2025). Veterinarians should treat aged dogs and cats differently from other life phases. The physical, psychological, emotional, and spiritual requirements of the pet's family may influence the veterinarian's clinically difficult healthcare decisions for the elderly pet (Hughes and Harkin, 2025). Diagnostics, medical and interventional therapies, pain management, nutrition, dental, anaesthesia, altering the environment, handling behavioural problems, and identifying and managing comorbidities are all part of the comprehensive strategy for the senior pet's optimal care. Senior care also entails assisting the patient's family and caregivers with end-of-life care planning and education (Dhaliwal et al., 2023)

2. HUMAN AND PET ANIMALS' RELATIONSHIP

The bond between humans and their pets is significantly influenced by emotional attachment (Lass-Hennemann et al., 2022). Dogs with their owners have special bonds that resemble human parent-offspring attachments because of a long tradition of canine domestication and adapting to the human environment, in which the animal is reliant on the caretaker (Hecht and Horowitz, 2015). As a result, the nature of the bond that exists between a pet and its owner can greatly affect the animal's quality of life. As early as 16 weeks of age, it has been demonstrated that pups develop an attachment to their owners, and research done in shelters has revealed that even socially isolated adult dogs have a tendency to develop relationships with their handlers (Egana-Marcos et al., 2025). It is believed that the genetic selection that took place during domestication is what caused this attachment tendency in dogs. Age-related physiological changes, particularly a decline in sensory perception, can significantly impact an older dog's bond to its owner. An aged dog may exhibit behavioural changes due to this shift. When exposed to a different environment or removed from their owners, older dogs (those older than 7 years) have demonstrated an enhanced response to stress (Vajányi et al., 2024).

3. PHYSIOLOGICAL CHANGES RELATED TO AGING IN PETS

The phrase "aging" is more frequently used to describe the complex biological changes that occur in older individuals, which gradually impair their ability to maintain homeostasis in the face of internal physiological and external environmental stressors. Age-related changes can sometimes be seen as positive. For instance, elderly dogs frequently exhibit good behaviour and established routines. Some aging

changes, such as muzzle greying or a little decline in activity level, are neither good nor bad. Changes associated with disease, altered mobility, or the emergence of behavioural issues are less desirable. Senescence is the collective term for deteriorating changes that impair an elderly dog's overall quality of life (Bellows, 2015).

The phenomena of aging and senescence have been explained by a number of theories. Many of these concentrate on genetic controls, such as the somatic mutation and gene regulation theories; others look at how temporal changes affect the homeostatic mechanisms of different body systems or how cellular aging leads to the accumulation of harmful products. For instance, the oxidative stress theory suggests that aging is associated with energy expenditure and the cumulative cellular damage caused by free radicals originating from both internal and external sources, such as mitochondrial respiration and immune cell reactions (Schmeer et al., 2019).

3.1. Cardiovascular system

The characteristics of organ structures decline as animals age due to wear and strain on their body organ systems. The cardiovascular system may experience a reduction in blood flow and baroreceptor activation as a result of aging. Increases in vagal tone and circulatory time may also be present. The vasculature may undergo alterations that impact normal blood flow, such as thicker elastic fibres, higher wall collagen, and wall calcification (Watson et al., 2023). Vascular dilatation brought on by a loss of elasticity causes the ventricle to gradually enlarge and the impedance to left ventricular output to rise. That could happen due to high blood pressure. Adrenergic receptors in the kidney, peripheral vascular, and coronary heart decrease with age. As a result, the heart rate drops, the right atrium's preload rises, and the ejection fraction falls. Therefore, compared to a younger animal, the elderly patient is less tolerant of volume depletion and is dependent on preload (Barman and Barua, 2023).

3.2. Urinary system

A substantial aging process occurs in the kidneys before any clinical symptoms appear. As an animal ages, its functional nephrons typically decline by 50%. A decrease in renal blood flow and glomerular filtration rate might result from cardiovascular abnormalities. Additionally, elderly animals may experience a decrease in the renin-angiotensin system's responsiveness, which in turn may impact the body's retention of water and sodium (Dybiec et al., 2022). All of these aspects cause physiological changes in elderly patients, making their bodies more prone to electrolyte and acid-base disturbances, haemorrhage and hypovolemia (Barman and Barua, 2023).

3.3. Respiratory system

As the pets age, their respiratory tract undergoes changes. Reduced lung elasticity and surface area for gas exchange result from the enlargement and coalescence of pulmonary alveoli. Furthermore, it has been demonstrated that dogs' breathing patterns change with age, resulting in decreased ventilation and hypoxic responses during slow-wave sleep (Braswell, 2023).

3.4. Digestive system

Dogs' GI tracts undergo several anatomical and functional changes as they age. These include changes in the intestinal microbiota, decreased villus size, cellular turnover rate, and colonic motility, and decreased secretion of gastric and salivary acids. It has been hypothesized that a diminished capacity to digest and absorb nutrients results from GI tract aging. Because of this, figuring out energy needs for senior dogs is not too difficult. Although there are individual differences in metabolic rates, older dogs should be given an energy reduction equal to a 20% decrement since maintenance energy needs drop by about 20% and energy digestibility stays the same (Bellows et al., 2015).

Age-related changes in hepatocytes are also notable. In geriatric animals, hepatic enzymes may decline in conjunction with a reduction in liver mass. The rate of drug metabolism and excretion decreases as a result (Bellows et al., 2016). The aged animal may exhibit ocular abnormalities such as cataract development, glaucoma, iris atrophy, and macular degeneration. Additionally, the visual compromise may influence the animal's behaviour and social standing within the group (Pati et al., 2015).

3.5. Musculoskeletal system

Degenerative joint disease, often known as osteoarthritis, is frequently observed in older animals. Inflammation and increased extracellular matrix proteoglycan degradation are linked to osteoarthritis, which leads to articular cartilage degeneration. The general shape and metabolism of the body might also be affected by age. Older animals often have a higher proportion of fat and less muscle mass. The distribution of water- or fat-soluble medicines in the bodies of elderly animals may be impacted by these alterations. As individuals age, their baseline metabolic rate and thermoregulatory capacity both decline (Barman and Barua, 2023; Guelfi et al., 2024).

3.6. Integumentary system

As a dog becomes older, he or she spends more time resting, sleeping, and relaxing that lead to bed sores (pressure sores or decubitus ulcers) on the elbows and hips (Caraty et al., 2019). Changes in aged skin can also affect skin and hair coat health. Dogs' skin and hair coat undergo a number of changes as they age. Both the dermis and

the epidermis experience an increase in cellular atrophy. Additionally, follicles may atrophy, causing patches of hair loss. Because the elastic fibres contain more calcium and pseudo-elastin, the skin becomes less flexible and loses its elasticity. Hyperkeratosis of the skin and hair follicles frequently coexists with this loss of flexibility. White hairs are frequently seen around an older dog's face and muzzle due to a decrease in tyrosinase activity and a loss of melanocytes in the hair follicles. Older animals may have scaly skin and a dry, dull hair coat due to changes in sebum production. Denture wear, skin elasticity loss, rough coat, and other outwardly noticeable changes are common and conventional signs of old age and are used in the initial assessment of geriatric dogs (Pati et al., 2015).

3.7. Immune system

Protecting against environmental infections, parasites, cancerous cells, allergies, and poisons is the goal of the immune system, an interconnected network of cells, proteins, and signalling molecules. As dogs age, they experience immunosenescence, a complicated reorganization of their immune systems. Both T-cell-mediated immunity and B-cell-mediated immunity undergo significant alterations in older dogs. It is commonly known that older dogs (8–13 years old) respond less proliferative to some antigens, such as phytohemagglutinin, concanavalin A, and pokeweed mitogens, than do younger dogs (2–4 years old). Additionally, aging is linked to alterations in the distribution of lymphocyte subsets in peripheral blood, such as phenotypic changes in the proportion, absolute number, or relative percentage of T cells and T-cell subsets and B cells, as well as in the expression of surface markers of memory or activation in these subpopulations (McMahon et al., 2025).

3.8. Behavioural problems in aged animals

As dogs age, senior pets have physical and metabolic changes that impact the majority of body systems. Pet animals may exhibit behavioural changes due to these kinds of physiological and metabolic changes. Their behaviour may vary naturally or may be linked to pathological aging brought on by a brain condition that impairs memory, learning, and motor function. Canine Cognitive Dysfunction Syndrome (CDS) is a pathological aging condition that produces behavioural alterations in older canines. It shares clinical, radiological, and histological characteristics with Alzheimer's disease in humans (Svicero et al., 2016).

Dogs that are older have spondylitis abnormalities in the spine, joint arthritis, and a loss of muscular mass. The animal's mobility will be impacted by these. Nuclear sclerosis is the most prevalent abnormality in the visual system that geriatric dogs suffer. Furthermore, age-related cataract development causes a decrease in functional vision. A reduction in grey and white matter is one of the changes in the central nervous system. Age-related alterations in neurotransmitter function include changes in monoamine oxidase levels as well as serotonin, acetylcholine, and dopamine levels. The majority of these alterations take place in neurons and dendrites. Compared to young pups, older dogs have lower brain oxygen levels.

Geriatric pets exhibit a variety of behavioural anomalies due to their diminished sensory abilities. Degeneration of peripheral auditory components is typically the cause of deafness in senior dogs. Older dogs have also been seen to exhibit changes in taste. In aged pets, the respiratory and digestive systems are impacted (Jain et al., 2015).

Pet animals can be aggressive in a variety of ways. Aggression in geriatric dogs is frequently seen due to underlying unpleasant medical issues, including dental disease and arthritis. Among older dogs, dominance aggression is one of the most common types of aggressiveness. House soiling has served as one of the main issues with elderly dogs. Age-related decreases in kidney function led to a decrease in the quantity of nephrons, perfusion, and the kidneys' capacity to concentrate. Additionally, there is proof that alterations in brain neurotransmitters are linked to renal impairment because older dogs lose neurons, which impairs house training. Behaviour changes may also lead to depression associated with separation. Signs include vocalization, elimination, destruction, and depression at being parted from the owner (Barman and Barua, 2023).

4. NUTRITIONAL MANAGEMENT FOR GERIATRIC ANIMALS

The 2021 AAHA (American Animal Hospital Association) Nutrition and Weight Management Guidelines for Dogs and Cats offer thorough suggestions for managing the nutritional needs of pets. Due to changes in an aging body, such as immune-senescence, inflammation, or a disease process, senior pets may have shifting energy and nutritional needs as well as lose muscle or total weight. Assessing muscle and body condition scores can help identify when dietary adjustments may be necessary and track changes in age-related diseases and normal aging. Over the course of a dog's life, maintenance energy requirements (MER) typically decline. In cats, MER declines until age 10, at which point it begins to rise (Cline et al., 2021).

In advanced age, body weight and condition are crucial parameters to keep an eye on. An essential component of evaluating the health of elderly animals is their dietary history. Older animals typically use less energy and tend to put on weight. Cats' energy requirements vary greatly depending on their age, according to published statistics. Calorie-restrictive diets have been linked to increased

longevity in dogs, with an ideal body condition score (BCS) of 4.5 to 5 out of 9. Cats with an optimal BCS of 6 out of 9 have a higher chance of lifespan, while underweight cats are more likely to experience morbidity and mortality (Teng et al., 2018; Summers et al., 2020).

To identify any subclinical issues that could be corrected with dietary changes, a thorough checkup should be conducted, including a blood test. A routine haemato-biochemical examination may be used to diagnose certain clinical findings, such as anaemia, hypoalbuminemia, hypokalaemia, elevated serum creatinine, or hyperglycaemia, which may point to issues that could be addressed with dietary changes as part of overall medical management (Rémond et al., 2015; Cianciolo et al., 2016).

For older animals, muscle mass should be assessed in addition to haemato-biochemical analysis. Even if they have a large amount of body fat, older animals may lose lean muscle mass. This reduction in lean muscle mass and activity levels helps to lower the amount of energy needed for maintenance. An essential nutrient for aged animals is protein. The body needs to synthesize new proteins, which can be done through the cycle of protein metabolism. The body must mobilize protein from lean body mass to support critical protein synthesis when dietary protein intake is inadequate, since both the catabolism and synthesis processes are slowed down. All things considered, elderly animals have a greater need for nutritional protein than do young animals (Churchill and Eirmann, 2021).

The nutritional balance of geriatric animals may be disrupted by the impacts of subclinical illness. Subclinical gastrointestinal disorders and polyuria can both result in poor absorption or increased loss of nutrients that are soluble in water or fat. The capacity to absorb dietary lipids is reduced in about 30% of senior domestic cats. Therefore, in aged animals, supplementation of these nutrients is required (Quimby et al., 2021). Chronic inflammation and deteriorating health are frequently linked to aging. Nutritional treatments and techniques to avoid age-related disease, extend longevity, and improve quality of life are of interest to both veterinarians and owners of elderly dogs and cats (Stockman, 2024).

5. NUTRITIONAL INTERFERENCES OF CERTAIN AGE-RELATED DISORDERS

The following discussion focuses on nutritional management, even though the most frequent age-related diseases in pets are best addressed with a multimodal strategy that combines medical management, exercise or environmental enrichment, and nutritional measures. The discussion that follows focuses on concurrent diseases that frequently affect aging pets and are frequently disregarded or written off as normal aging changes, even though dietary intervention for these conditions can be crucial to maximizing health.

5.1. Abnormality in body weight

The most common type of malnutrition, hyper-adiposity, is a contributing factor to numerous disorders associated with obesity. The canine longevity study demonstrated the advantages of keeping a lean body and the numerous detrimental health effects of even a 25% increase in body weight over the optimal BCS. Over-12-year-old cats are more likely than young adult cats to lose weight as they get older, and most likely, they are underweight. It has been demonstrated that loss of weight in cats occurs before disease diagnoses, and early detection may offer the chance for an early diagnosis and medical or nutritional intervention. Either increase the amount of the present food or switch to a more calorie-dense diet to solve inadvertent weight loss (Teng et al., 2018; Shepherd, 2021).

5.2. Degenerative joint disease (DJD)

The most frequent joint condition in dogs and cats with advancing age is osteoarthritis (OA). Obesity or being overweight is acknowledged as a major risk factor. Animals with a frailty score have both reduced activity and poor mobility. A shorter time to death is linked to increased frailty. Providing omega-3 fatty acids and managing weight and muscle are two nutritional options for extending elderly health and reducing OA (Hua et al., 2016). Kar et al. (2023) reviewed that omega fatty acids help to prevent all upcoming joint disorders. In dogs with arthritis, reducing hyper-adiposity can alleviate the clinical manifestations of lameness. For older pets, strategies to preserve lean body mass (LBM), BCS, and healthy body weight should be given priority. Maintaining LBM, delaying frailty, and delaying the start and progression of OA are the nutritional objectives (Hua et al., 2016).

When compared to other nutraceuticals, the intake of omega-3 polyunsaturated fatty acids (n-3-PUFAs) in dogs and cats exhibits the strongest evidence for synovial anti-inflammatory benefits (Barbeau-Gregoire et al., 2022). Kar et al. (2025) evaluated that omega-3 fatty acids have anti-inflammatory and immunomodulatory properties. The n-3-PUFAs docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) compete with arachidonic acid in cell membranes to produce fewer prostaglandins, thromboxanes, and inflammatory leukotrienes, which lessen pain (Kar et al., 2024). Research has demonstrated the advantages of giving dogs with OA-related lameness n-3-PUFA supplements. As of right now, there is no standardized amount of n-3 fatty acids that is suitable for cats or dogs (Loef et al., 2019). For OA in dogs, EPA and DHA dosages of 230–370 mg kg^{-1} of metabolic body weight are often advised; however, doses of 90–110 mg

kg^{-1} body weight also worked well. A meal with 188 mg of n-3 fatty acids per 100 kcal, or an equivalent quantity of supplements, was found to increase owners' perceptions of their cats' activity levels in cats with OA (Johnson et al., 2020; Churchill and Eirmann, 2021).

5.3. Cognitive dysfunction syndrome (CDS)

Similar to the initial stages of Alzheimer's disease (AD) in humans, canine cognitive dysfunction syndrome (CCDS) is an age-related condition characterized by cognitive impairment (Dewey et al., 2019). According to the literature, the prevalence of cognitive impairment in older dogs varies greatly, and the various scales and populations that have been researched make it difficult to compare studies. According to published statistics, the prevalence varies from 14.2% in dogs older than 10 to 22.5% in dogs older than 9 to 74% in dogs older than 7. One of the main risk factors for the rising incidence and severity of CCDS is age (Madari et al., 2015).

Changes in behaviour, such as house training, food interest, attention and activity, awareness of the environment, obsessive behaviours, circling, tremors, altered sleep patterns, stiffness or weakness, and improper vocalization, can all be signs of cognitive impairment. Although they may be used for both prevention and therapy, nutraceuticals work best when associated with environmental enrichment. Medium-chain triglycerides and antioxidants have demonstrated promise in treating cognitively impaired dogs (Wrightson et al., 2023).

Dietary changes and nutritional balance can help older pets lessen the consequences of aging. The development of CDS and brain aging is significantly influenced by free radicals. Antioxidant supplements in the diet can lessen their harmful effects. Studies have revealed a decline in DHA in the aging brain, which is necessary for effective neuronal function. Older pets with CDS may benefit from DHA supplements in the form of fish oil (May and Laflamme, 2019). Since the efficiency of glucose metabolism declines with age, it is also advantageous to provide an alternative energy source to glucose. Alternative energy sources seen in geriatric diets include lactates, ketone bodies, and fatty acids made from medium-chain triglycerides (Pan, 2021).

6. COMFORT AND MOBILITY FOR ELDERLY PETS

Even though an elderly pet may no longer be able to jump as they once did, they still enjoy life. What they need now is support and comfort for their aging joints and muscles, which includes: heated mats or orthopaedic beds; ramps or stairs that are pet-friendly; non-slip rugs for slippery floors; short, gentle walks or interactive play sessions; cats may enjoy elevated perches, but arthritis can make jumping painful; provide them with comfortable hideaways at ground level; and dogs may still want to chase balls, but with more rest periods and softer landings (Costa et al., 2022).

Most pet owners will initially see that their pet is unable to stand, stroll, or lie down with ease at home. The home environment can be altered in a few ways that will have an impact. The first is the area the pet must walk on. The most difficult surfaces for a pet with mobility impairments are wood floors and slippery marble or tile; when the pet slips or slides, it is very difficult for them to get up or feel comfortable walking. It can be beneficial to strategically place yoga mats or carpet runners. If there are stairs in the house, they should be carpeted, have stair tread mats, or, in certain situations, be accessible by wheelchair or pet ramp. To improve traction, hair in between the paw pads should be cut (Johnson, 2017).

7. EMOTIONAL AND MENTAL HEALTH MANAGEMENT

Creating a supportive atmosphere and addressing possible issues that may occur with age are the main goals of geriatric pet care, particularly with relation to emotional and mental well-being. This entails identifying symptoms of cognitive decline, modifying daily schedules to sustain mental and physical activity, and using resources such as pet therapy to address problems like loneliness and depression (Chapagain et al., 2018).

Cognitive status can also be evaluated with certain behavioural tests. Nonetheless, it is believed that CCD is mainly underdiagnosed. Although the treatment is palliative and attempts to preserve cognitive function and alleviate clinical symptoms, it is not curative and necessitates a comprehensive approach to the owner-pet relationship. Numerous non-specific medications are said to affect clinical symptoms, while several specialized treatments have been proven effective in treating CCD. Numerous non-medical interventions, including dietary changes, food supplements, environmental changes, physical activity, and traditional medicine, have also shown promise. The best outcomes are probably going to come from a combination of these treatments (Taylor et al., 2023). Puzzle toys, gentle training refreshers, routine and regularity, and soothing pheromones or soft music can all help seniors maintain their mental sharpness. If a pet appears disoriented, begins to pace, or loses familiar commands, consult a veterinarian. More than any medication, routine and love may calm aging minds (Gardner and McVety, 2016).

8. GROOMING AND HYGIENIC MAINTENANCE FOR GERIATRIC PETS

Cleaning and keeping the appearance of a pet's skin and coat is known as pet grooming. Cleaning the ears, cutting the nails, and bathing, brushing, or clipping the fur

are some examples (McDonald et al., 2022). Aged pets must be kept well-groomed for a number of reasons. Pets may develop more sensitive skin and coats as they become older, making them more vulnerable to infections, irritations, and other issues. In addition to keeping their skin and coat clean and healthy, grooming can help them feel more comfortable and avoid these problems. This will also help to look for any changes in the coat or skin that might point to a health issue (Chambers, 2023). Grooming might cause anxiety or discomfort in older pets. To assist them in relaxing, create a peaceful, quiet atmosphere. Talk gently and gesture in a comforting, gentle manner. They will feel much more comfortable and be in better health (Shojai, 2024).

9. PRECAUTIONS WHILE CARING AGED DOG

When caring for an elderly dog, it's important to put their comfort first, keep a careful eye on their health, and adjust their surroundings and daily routine to suit their evolving requirements. Gentle physical activity, a comfortable bed, healthy food, and routine veterinary examinations are all crucial. If they exhibit any symptoms of pain, discomfort, or illness, then modify the treatment (Chambers, 2023).

9.1. Veterinary care

The terms "senior health care," "geriatric wellness," "geriatric health care," and "senior care" refer to distinct health care initiatives intended to enhance the regular veterinarian care of elderly dogs and cats. Arrange for routine examinations with the veterinarian to track general health and treat age-related ailments, including kidney disease, arthritis, or cognitive decline. To check for possible problems, blood and urine tests should be reviewed at least once a year (Dhaliwal et al., 2023).

Veterinarians can offer advice on senior dog food and supplements that are suitable for addressing dietary requirements and metabolic changes associated with aging (Stockman and Owens, 2024). Arthritis and other movement problems can affect elderly dogs. Veterinarians can provide guidance on how to manage pain, adjust activity, and use supportive equipment like harnesses or ramps (Mille, 2022). While core immunizations remain vital, veterinarians may modify the vaccination regimen for senior dogs. Parasite control is also necessary to avoid infestations, which might be more difficult for aged dogs to fight (Dall'Ara et al., 2023).

9.2. Comfortable environment

Provide a comfortable, peaceful, and secure place to sleep. A warmed dog bed or orthopaedic bed might help ease joint pain. Water and food bowls should be easily accessible, and for dogs who have trouble moving around, raised bowls may be a good option. On slippery floors, place carpets or rugs to stop falls. Elderly dogs are especially vulnerable to heat and cold, so be aware of weather extremes (Dhaliwal et al., 2023).

10. CONCLUSION

The goal of geriatric pet care was to increase older animals' quality of life by attending to their particular requirements and health issues. Regular veterinary examinations, specialized foods, adequate exercise, adjustments to the surroundings, and pain control were all part of this. A thorough physical examination and blood profile, early dietary intervention to promote recovery, health, and quality of life, were made to promote early disease detection. Detecting, measuring, and reducing the harmful effects would have significantly improved animal welfare.

11. REFERENCES

Arbeev, K.G., Ukraintseva, S.V., Yashin, A.I., 2016. Dynamics of biomarkers in relation to aging and mortality. Mechanisms of Ageing and Development 156, 42–54. Doi: 10.1016/j.mad.2016.04.010.

Barbeau-Gregoire, M., Otis, C., Cournoyer, A., Moreau, M., Lussier, B., Troncy, E., 2022. A systematic review and meta-analysis of enriched therapeutic diets and nutraceuticals in canine and feline osteoarthritis. International Journal of Molecular Sciences 23(18), 10384. https://doi.org/10.3390/ijms231810384.

Barman, D., Barua, A., 2023. Review of care and management of geriatric pet animals. The Pharma Innovation Journal 12, 1281–1283. E-ISSN Number: 2277-7695P-ISSN Number: 2349-8242.

Bellows, J., Center, S., Daristotle, L., Estrada, A.H., Flickinger, E.A., Horwitz, D.F., Shoveller, A.K., 2016. Aging in cats: common physical and functional changes. Journal of Feline Medicine and Surgery 18(7), 533–550. https://doi.org/10.1177/1098612x16649523.

Bellows, J., Colitz, C.M., Daristotle, L., Ingram, D.K., Lepine, A., Marks, S.L., Zhang, J., 2015. Common physical and functional changes associated with aging in dogs. Journal of the American Veterinary Medical Association 246(1), 67–75. https://doi.org/10.2460/javma.246.1.67.

Braswell, C., 2023. Respiratory distress. Hospice and palliative care for companion animals: Principles and Practice, 178–185. https://doi.org/10.1002/9781119036722.ch12.

Caraty, J., De Vreught, L., Cachon, T., Moissonnier, P., Bongartz, A., Viguier, E., Carozzo, C., 2019. Comparison of the different supports used in veterinary medicine for pressure sore prevention. Journal of

Small Animal Practice 60(10), 623–630. https://doi.org/10.1111/jsap.13061.

Chambers, H., 2023. My senior dog: A complete guide to caring for your old dog (Vol. 3). The Publishing Den. https://books.google.co.in/books/about/My_Senior_Dog.html?id=wum1EAAAQBAJ&redir_esc=y. Accessed on 25/08/2025.

Chapagain, D., Range, F., Huber, L., Virányi, Z., 2018. Cognitive aging in dogs. Gerontology 64(2), 165–171. https://doi.org/10.1159/000481621.

Churchill, J.A., Eirmann, L., 2021. Senior pet nutrition and management. Veterinary clinics: Small Animal Practice 51(3), 635–651. https://doi.org/10.1016/j.cvsm.2021.01.004.

Cianciolo, R.E., Benali, S.L., Aresu, L., 2016. Aging in the canine kidney. Veterinary Pathology 53(2), 299–308. https://doi.org/10.1177/0300985815612153.

Cline, M.G., Burns, K.M., Coe, J.B., Downing, R., Durzi, T., Murphy, M., Parker, V., 2021. 2021 AAHA nutrition and weight management guidelines for dogs and cats. Journal of the American Animal Hospital Association 57(4), 153–178. https://doi.org/10.5326/jaaha-ms-7232.

Costa, S., Sousa, L., Luz, H., Padeiro, M., 2022. Daily mobility and social interactions among community-dwelling older adults with pet dogs: A scoping review. Journal of Applied Gerontology 41(12), 2609–2623. https://doi.org/10.1177/07334648221116633.

Cozzi, B., Ballarin, C., Mantovani, R., Rota, A., 2017. Aging and veterinary care of cats, dogs, and horses through the records of three university veterinary hospitals. Frontiers in Veterinary Science 4, 14. https://doi.org/10.3389/fvets.2017.00014.

Dall'Ara, P., Lauzi, S., Turin, L., Castaldelli, G., Servida, F., Filipe, J., 2023. Effect of aging on the immune response to core vaccines in senior and geriatric dogs. Veterinary Sciences 10(7), 412. https://doi.org/10.3390/vetsci10070412.

Dewey, C.W., Davies, E.S., Xie, H., Wakshlag, J.J., 2019. Canine cognitive dysfunction: pathophysiology, diagnosis, and treatment. veterinary clinics of North America: Small Animal Practice 49, 477. https://doi.org/10.1016/j.cvsm.2019.01.013.

Dhaliwal, R., Boynton, E., Carrera-Justiz, S., Cruise, N., Gardner, M., Huntingford, J., Rozanski, E., 2023. 2023 AAHA senior care guidelines for dogs and cats. Journal of the American Animal Hospital Association 59(1), 1–21. https://doi.org/10.5326/jaaha-ms-7343.

Dias-Pereira, P., 2022. Morbidity and mortality in elderly dogs-a model for human aging. BMC Veterinary Research 18(1), 457. https://doi.org/10.1186/s12917-022-03518-8.

Dybiec, J., Szlagor, M., Młynarska, E., Rysz, J., Franczyk, B., 2022. Structural and functional changes in aging kidneys. International Journal of Molecular Sciences 23(23), 15435. https://doi.org/10.3390/ijms232315435.

Egana-Marcos, E., Goni-Balentziaga, O., Azkona, G., 2025. A Study on the attachment to pets among owners of cats and dogs using the Lexington Attachment to Pets Scale (LAPS) in the Basque Country. Animals 15(1), 76. https://doi.org/10.3390/ani15010076.

Gardner, M., McVety, D., 2016. Caring for geriatric pets in your practice. Today's Veterinary Practice 6, 103–108. https://todaysveterinarypractice.com/wp-content/uploads/sites/4/2016/08/TVP_2016-0910_PB-Geriatric.pdf. Accessed on 25/08/2025.

Gardner, M., 2017. Geriatrics and fragility. Treatment and care of the geriatric veterinary patient, 11–19. https://www.wiley.com/en-us/treatment+ and+the+Geriatric+Veterinary+Patient-p-9781119187226.

Grimm, D., 2015. Why do we outlive our pets? Science 350(6265), 1182–1185. https://doi.org/10.1126/science.350.6265.1182.

Guelfi, G., Capaccia, C., Tedeschi, M., Bufalari, A., Leonardi, L., Cenci-Goga, B., Maranesi, M., 2024. Dog aging: A comprehensive review of molecular, cellular, and physiological processes. Cells 13(24), 2101. https://doi.org/10.3390/cells13242101.

Guo, J., Huang, X., Dou, L., Yan, M., Shen, T., Tang, W., Li, J., 2022. Aging and aging-related diseases: from molecular mechanisms to interventions and treatments. Signal Transduction and Targeted Therapy 7(1), 391. https://doi.org/10.1038/s41392-022-01251-0.

Hecht, J., Horowitz, A., 2015. Introduction to dog behavior. Animal behavior for shelter veterinarians and staff 3-30. https://www.antoniogoliveira.com/site/assets/files/1529/animal_behavior_for_shelter_veterinarians_and_staff.pdf.

Herzig, S., Zollinger, A., Texari, L., Holzwarth, J.A., Middleton, R.P., Pan, Y., Gut, P., 2025. A biological age based on common clinical markers predicts health trajectory and mortality risk in dogs. GeroScience 47(1), 45–59. Doi: 10.1007/s11357-024-01352-4.

Hua, J., Hoummady, S., Muller, C., Pouchelon, J.L., Blondot, M., Gilbert, C., Desquilbet, L., 2016. Assessment of frailty in aged dogs. American Journal of Veterinary Research 77(12), 1357–1365. https://doi.org/10.2460/ajvr.77.12.1357.

Hughes, B., Lewis Harkin, B., 2025. The impact of continuing bonds between pet owners and their pets following the death of their pet: A systematic narrative synthesis. OMEGA-Journal

of Death and Dying 90(4), 1666–1684. https://doi.org/10.1177/00302228221125955.

Jain, S., Patel, P.R., Raval, S.K., 2015. A study of diseases in geriatric dogs. Indian Journal of Animal Research 49(6), 866–868. Doi 10.18805/ijar.7053.

Johnson, K.A., Lee, A.H., Swanson, K.S., 2020. Nutrition and nutraceuticals in the changing management of osteoarthritis for dogs and cats. Journal of the American Veterinary Medical Association 256(12), 1335–1341. https://doi.org/10.2460/javma.256.12.1335.

Johnson, T.P., 2017. Mobility Issues. Treatment and Care of the Geriatric Veterinary Patient, 145–184.https://www.wiley.com/en-us/t+and+Care+of+the+Geriatric+Veterinary+Patient-p-9781119187240.

Kar, P., Rajesh, J.B., Behera, S.K., Konwar, B., Samanta, A.K., Prasad, H., Sarma, K., Tolenkhomba, T.C., 2024. Omega fatty acids and their role in the amelioration of canine dermatological disorders. Journal of Scientific Research and Reports 30(11), 910–921. https://doi.org/10.9734/jsrr/2024/v30i112618.

Kar, P., Rajesh, J.B., Behera, S.K., Konwar, B., Samanta, A.K., Prasad, H., Sarma, K., Tolenkhomba, T.C., 2025. Alpha linolenic acid and linoleic acid and their effects on the therapeutic regimen of canine dermatoses. International Journal of Advanced Biochemistry Research 9(5), 351–360. https://www.doi.org/10.33545/26174693.2025.v9.i5Se.4424.

Kar, P., Rajesh, J.B., Marwein, S.C., Rose, K.T., Samanta, A.K., Behera, S.K., Prasad, H., Konwar, B.H., Mar, 2023. Role of omega fatty acids in canine health. The Science World 3(11), 2852–2856. http://dx.doi.org/10.5281/zenodo.10076245.

Lass-Hennemann, J., Schäfer, S.K., Sopp, M.R., Michael, T., 2022. The relationship between attachment to pets and mental health: the shared link via attachment to humans. BMC Psychiatry 22(1), 586. https://doi.org/10.1186/s12888-022-04199-1.

Lazzaroni, M., Range, F., Backes, J., Portele, K., Scheck, K., Marshall-Pescini, S., 2020. The effect of domestication and experience on the social interaction of dogs and wolves with a human companion. Frontiers in Psychology 11, 508171. https://doi.org/10.3389/fpsyg.2020.00785.

Li, Y., Tian, X., Luo, J., Bao, T., Wang, S., Wu, X., 2024. Molecular mechanisms of aging and anti-aging strategies. Cell Communication and Signalling 22(1), 285. Doi: 10.1186/s12964-024-01663-1.

Loef, M., Schoones, J.W., Kloppenburg, M., Ioan-Facsinay, A., 2019. Fatty acids and osteoarthritis: different types, different effects. Joint Bone Spine 86(4), 451–458. https://doi.org/10.1016/j.jbspin.2018.07.005.

Madari, A., Farbakova, J., Katina, S., Smolek, T., Novak, P., Weissova, T., Novak, M., Zilka, N., 2015. Assessment of severity and progression of canine cognitive dysfunction syndrome using the CAnine DEmentia Scale (CADES). Applied Animal Behaviour Science 171, 138. http://dx.doi.org/10.1016/j.applanim.2015.08.034.

May, K.A., Laflamme, D.P., 2019. Nutrition and the aging brain of dogs and cats. Journal of the American Veterinary Medical Association 255(11), 1245–1254. https://doi.org/10.2460/javma.255.11.1245.

Mille, M.A., McClement, J., Lauer, S., 2022. Physiotherapeutic strategies and their current evidence for canine osteoarthritis. Veterinary Sciences 10(1), 2. https://doi.org/10.3390/vetsci10010002.

McDonald, S.E., Doherty, C., Sweeney, J., Kisiel, L., Matijczak, A., Niestat, L., Gupta, M., 2022. Barriers to and facilitators of pet grooming among clients served by a subsidized grooming service program. Frontiers in Veterinary Science 9, 1021707. https://doi.org/10.3389/fvets.2022.1021707.

McKenzie, B.A., Chen, F.L., Gruen, M.E., Olby, N.J., 2022. Canine geriatric syndrome: a framework for advancing research in veterinary geroscience. Frontiers in Veterinary Science, 9, 853743. https://doi.org/10.3389/fvets.2022.853743.

McMahon, J.E., Graves, J.L., Tovar, A.P., Peloquin, M., Greenwood, K., Chen, F., Juarez-Salinas, D., 2025. Translational immune and metabolic markers of aging in dogs. Scientific Reports 15(1), 14460. DOI: https://doi.org/10.1038/s41598-025-99349-2.

Pan, Y., 2021. Nutrients, cognitive function, and brain aging: what we have learned from dogs. Medical Sciences 9(4), 72. https://doi.org/10.3390/medsci9040072.

Pati, S., Panda, S.K., Acharya, A.P., Senapati, S., Behera, M., Behera, S.S., 2015. Evaluation of geriatric changes in dogs. Veterinary World 8(3), 273. https://doi.org/10.14202/vetworld.2015.273-278.

Quimby, J., Gowland, S., Carney, H.C., 2021. AAHA/AAFP feline life stage guidelines. Journal of Feline Medicine and Surgery 23(3), 211–33. https://doi.org/10.1177/1098612x21993657.

Rajapaksha, E., 2018. Special considerations for diagnosing behaviour problems in older pets. Veterinary Clinics: Small Animal Practice 48(3), 443–456. https://doi.org/10.1016/j.cvsm.2017.12.010.

Rémond, D., Shahar, D.R., Gille, D., Pinto, P., Kachal, J., Peyron, M.A., Vergères, G., 2015. Understanding the gastrointestinal tract of the elderly to develop dietary solutions that prevent malnutrition. Oncotarget 6(16), 13858. https://doi.org/10.18632/oncotarget.4030.

Schmeer, C., Kretz, A., Wengerodt, D., Stojiljkovic, M.,

Witte, O.W., 2019. Dissecting aging and senescence-current concepts and open lessons. Cells 8(11), 1446. https://doi.org/10.3390/cells8111446.

Shepherd, M., 2021. Canine and feline obesity management. Veterinary Clinics: Small Animal Practice 51(3), 653–667. https://doi.org/10.1016/j.cvsm.2021.01.005.

Shojai, A., 2024. Complete care for your aging cat. Furry Muse Publications. https://shojai.com/books/old-cat-care/. Accessed on 25/08/2025.

Stockman, J., 2024. Nutrition and aging in dogs and cats. In nutrition and metabolism of dogs and cats, pp. 203–215. Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-54192-6_9.

Summers, S.C., Stockman, J., Larsen, J.A., Sanchez Rodriguez, A., Zhang, L., 2020. Evaluation of nutrient content and caloric density in commercially available foods formulated for senior cats. Journal of Veterinary Internal Medicine 34(5), 2029–2035. https://doi.org/10.1111/jvim.15858.

Svicero, D.J., Heckler, M.C.T., Amorim, R.M., 2016. Prevalence of behavioral changes in senile dogs. Ciencia Rural 47(2), e20151645. https://doi.org/10.1590/0103-8478cr20151645.

Taylor, T.L., Fernandez, E.J., Handley, K.N., Hazel, S.J., 2023. Non-pharmacological interventions for the treatment of canine cognitive dysfunction: a scoping review. Applied Animal Behaviour Science 269, 106097. http://dx.doi.org/10.1016/j.applanim.2023.106097.

Teng, K.T., McGreevy, P.D., Toribio, J.L., 2018. Strong associations of nine-point body condition scoring with survival and lifespan in cats. Journal of Feline Medicine and Surgery 20, 1110–1118. https://doi.org/10.1177/1098612x17752198.

Vajányi, D., Skurková, L., Petková, B., Kottferova, L., Kasicova, Z., Simanova, V., Kottferova, J., 2024. Ageing canine companions: most common manifestations and the impact of selected factors. Applied Animal Behaviour Science 271, 106164. https://doi.org/10.1016/j.applanim.2024.106164.

Watson, K.M., Kahe, K., Shier, T.A., Li, M., 2023. Age modifies the association between pet ownership and cardiovascular disease. Frontiers in Veterinary Science 10, 1168629. https://doi.org/10.3389/fvets.2023.1168629.

Wrightson, R., Albertini, M., Pirrone, F., McPeake, K., Piotti, P., 2023. The relationship between signs of medical conditions and cognitive decline in senior dogs. Animals 13(13), 2203. https://doi.org/10.3390/ani13132203.