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Article

Welfare assessment of the sheltered dogs using behavioral indicators

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Abstract: The aim of this work was to evaluate the welfare of sheltered dogs using behavioral indicators that indicate negative and positive emotional states (provoked and unprovoked behavior). The behavior of the selected animals was evaluated by direct observation of the indicators. The data collected was used for computing a life quality score (LQ). Forty-three behavioral indicators (23 negative indicators and 20 positive indicators) were identified and analyzed in 20 dogs housed for more than two years in the shelter. Six negative indicators (tail chasing, circling, escape attempt, chewing bars, coprophagy and lifting a front leg) were not identified in any of the 20 evaluated dogs. An average LQ score of 0.115 was obtained, with values between -0.35 and 0.4. The results showed that 55% of the assessed dogs had higher LQ scores than the mean value. Canine behavior can be assessed within a reasonable amount of time by recording the presence or absence of certain behavioral indicators. These recordings can then be processed to obtain a quality of life score for each animal.

Keywords: behavioral indicators, dog, life quality score, shelter.

1. Introduction

Dogs are beloved companion animals throughout the world, but millions of them end up in the care of an animal shelter or rescue organization each year [1]. Divers research have identified that the environment offered by the shelter can have negative effects on the health and well-being of dogs, especially on those who have to live for a long period of time [2 - 6].

In many animal welfare programs, the focus is usually on stress and negative emotional states [3, 7]. However, we must take into account that a complete evaluation must also capture positive emotional states [3, 8]. Several studies have presented certain stressful elements for dogs in shelters: lack of social interaction, little exercise, minimal control over their environment, unpredictable noise levels, and caretaking routines can make living in a shelter stressful to dogs [9, 10, 11]. In a stressful situation, the individual fails to cope and adapt, endangering the well-being of the animal [12]. Welfare assessment in shelter dogs is a very current topic and highly debated both in the mass media and in the veterinary medical world. This is due to the difficulty of defining certain indicators, but also to the complexity of the systems involved and the adaptation skills of individual dogs [13].

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Welfare assessment of dogs is based on the use of the ethogram. Most ethograms were created for a specific environment or research area. Thus, based on the ethogram, a series of tools have been validated, which can be generally used in a variety of populations [5, 6, 14, 15, 16, 17, 18, 19].

An ethogram is a list or catalogue of species-specific behaviors. The behaviors are defined and then organized into general categories such as locomotion, resting, playing, change in posture, and stereotypy or repetitive behaviors, of which circling, pacing, whirling, and wall-bouncing are just a few examples. In general, each behavior is recorded along with its frequency and duration in a specific period of time. Once the observation period has ended, the behavior scores are calculated and an assessment is completed [1]. The aim of this work was to evaluate the welfare of sheltered dogs using behavioral indicators that indicate negative and positive emotional states (provoked and unprovoked behavior).

2. Materials and Methods

The study was carried out in a private dog shelter owned by an animal protection association (non-governmental organization) from Cluj county. Animals selected for evaluation had been in the shelter for more than 2 years and at the time of the study had no documented health problems, no ocular discharge, lameness or wounds.

The behavior of the selected animals was evaluated by direct observation based on behavioral indicators indicating negative and positive emotional states (Table 1, Table 2).

The behavioral characteristics were recorded using a binary system 1/0, where 1 has meant the occurrence of a given behavior and 0 has meant its absence, in a given time period, during the assessment that was done [14, 20]. The ethogram used, originally proposed by [14] was adapted to the conditions present in our study. Those characteristics that could not be observed, either due to the design of the shelter or for other objective reasons, were excluded.

The first evaluation method involved videotaping the experiment so that the interaction with the animals could be reviewed later. The purpose of this approach was to increase the precision with which the elements in the ethogram were recorded and to correct any elements possibly omitted by the assessor. This method helped to record the part of unprovoked behavior and the initial interaction between the assessor and the animals. The written evaluation was based on the ethogram. Printed copies were used in the form of a table, which contained the behavioral manifestations to be followed and the names of the dogs to be evaluated. The results were then processed in Microsoft Excel.

The second evaluation was carried out as follows: (1) evaluation of unprovoked behavior and (2) evaluation of provoked behavior.

In the first stage, the evaluator positioned himself 2-2.5 m away from the corner of the box, without trying to interact with the animals in any way. The animals were observed for 3 minutes. Eye contact with the dogs, sudden movements or direct addressing of the animal with commands was avoided during this stage. Unprovoked behavior was recorded by going through the elements of the ethogram and marking with 1 the presence of a certain behavior manifestation and with 0 its absence.

For the evaluation of the provoked behavior the evaluator went to the box and brought the hand close to the fence to allow the dog to know the evaluator. The evaluator then entered the pen and assumed a non-threatening position, crouching next to the fence, allowing the dog to approach. This stage also lasted for 3 minutes. Shy dogs were not called and no attempt was performed to approach them. The results of the ethogram were used to calculate a Life Quality score (LQ score) according to the method proposed by Kiddie and Collins [14, 15].

Table 1. Description and prevalence of negative behavioral indicators

Indicators of negative emotional state, unprovoked behavior		**No. dogs**	**% dogs**
Repeatedly pacing in the pen	Dog repeatedly (>3 times) paces around kennel in a fixed route	9	45
Repeatedly jumping on the kennel wall	Dog repeatedly (>3 times) jumps up kennel wall from one side to another	1	5
Tail chasing	Dog chases its tail repeatedly (>3 times)	0	0
Circling	Dog repeatedly walks around in small circle (>3 times)	0	0
Repeatedly display playing position	Dog repeatedly displays the play bow posture (>3 times)	1	5
Excessive drinking	Dog drinks large volumes of water, in excess of what is normal	0	0
Panting	Dog pants for reasons unrelated to physical exertion or warm ambient temperature (only record if temperature < 25 ^{0}C)	9	45
Apathy	The dog is withdrawn and does not respond to commands	1	5
Escape attempt	Dog attempts to escape kennel in a forceful manner whenever the kennel door is opened	0	0
Hiding	Dog is obscured from view of kennel staff, behind its bed or other kennel furniture for prolonged periods when not asleep (>2mins)	2	10
Chewing bars	Dog repeatedly chews and bites at the bars of the kennel (>20 secs)	0	0
Low posture	Tail is lowered, ears are back and legs are bent	4	20
Coprophagy	Did the dog eat its own or another dog's faeces?	0	0
Lifting a front leg	A forepaw is lifted off the ground and held there	0	0
Standing	Positioned with four feet in contact with ground and legs almost or fully extended	13	65
Sniffing a surface/nose on a surface	The nose is held close to or touching a surface, and/or sniffing the surface	2	10
Whining	High pitched vocalisation	1	5
Aggressiveness toward other dogs	Any lip lifting, growling, snapping, or biting	2	10
Startling	Legs flex briefly, body and head quickly, briefly move back, usually in response to a sudden noise, or dog quickly moves backwards	6	30
Box walking without exploring environment	Travels forward without obviously investigating its environment	2	10
Indicators of negative emotional state, provoked behavior			
Oral behaviors, abnormal movements	Includes tongue out; tip of tongue briefly extended; snout licking; lip licking; swallowing, lip smacking	10	50
Ambivalent posture	A crouched body posture +a position that is higher than the breed-specific position; or a high body posture + by a position of the tail that is below normal	9	45
Aggressiveness	Any lip lifting, growling, snapping, or biting	1	5

Table 2. Description and prevalence of positive behavioral indicators

Indicators of positive emotional state, unprovoked behavior		**No. dogs**	**% dogs**
High level of activity	Increased levels of any locomotion or movement	6	30
Grooming	The dog grooms itself: scratched/washed/stretched	1	5
Alert	Generally inactive but with eyes open, and head and ears moving, can be lying down, sitting or standing	16	80
Scanning the environment	Eyes continuously move to view the environment	19	95
Exploring environment	Walks with nose close to surfaces or sniffing objects	5	25
Adopting playing position	Forequarters are lowered to the ground, with rump raised	1	5
Ears up	Ears held forward	12	60
High body position	Breed specific posture shown by dogs under neutral conditions, but with a higher tail or head elevated and ears forwards, or dog standing extremely erect	10	50
Spending time in the front part of the box	Time spent in the half of the kennel closest to the external wall/door	13	65
Grunting	Isolated intense expiration (breathing out)	3	15
Laying down	Most of body in contact with ground	10	50
Playing with objects	Any vigorous or galloping gaited behaviour directed towards a toy or other object, including chewing, biting, shaking it from side to side, batting it with a paw	0	0
Playing with other dogs	Leaps onto another dog, with body relaxed, stands on hind legs and paws at other dog, places mouth around muzzle, head, neck, or legs of other dog with little pressure, pats another dog with a forepaw, lifting both front paws off the ground rapidly to bounce up and down, done in front of and orientated towards another dog	6	30
Licking other dogs' face	The dog licks the muzzle of its kennelmate	0	0
Tail wagging	Repetitive wagging movements of the tail	12	60
Shaking	Dog shakes its whole body briefly as if drying itself	0	0
Indicators of positive emotional state, provoked behavior			
Tail wagging	Repetitive wagging movements of the tail	13	65
Laying down	Most of body in contact with ground	0	0
Initiating physical contact	Dog starts an interaction with the assessor or kennelmate	13	65
Shaking	Dog shakes its whole body briefly as if drying itself	1	5

3. Results and discussion

Regarding the 43 indicators analysed (23 negative indicators and 20 positive indicators), six negative indicators (tail chasing, circling, escape attempt, chewing bars, coprophagy and lifting a front leg) were not identified in any of the 20 evaluated dogs (Table1, Table 2.).

These indicators were associated in previous studies with high levels of stress or precarious housing conditions [21, 22]. Two of the indicators, namely: tail chasing and circling are considered stereotypic behavioral disorders [23]. Their absence in this study may suggest that the animals are housed in conditions that do not cause the appearance of certain behavioral stereotypes. Also, the lack of these manifestations may suggest that the management practices applied within the shelter have a beneficial effect in preventing negative behaviors that are associated with stress. In our study, the housing conditions were adequate and in conformity with the legal regulations in force. In addition, the boxes were not overcrowded. In some situations, the dogs can be housed in precarious conditions, overcrowded boxes and they can have limited contact with humans [24]. In addition, for some dogs it is possible to be exposed to several traumatic situations, abuse and neglect [25].

Based on the results obtained in the evaluation of the dogs' behavior, a LQ score was calculated for each animal. Thus, an average LQ score of 0.115 was obtained, with values between -0.35 and 0.4. The analysis of the results showed that 55% of the assessed dogs had higher LQ scores than the mean value. Nine animals (D2, D4, D6, D7, D10, D12, D15, D16, D17) had negative scores. The maximum score was recorded for D8 (Figure 1).

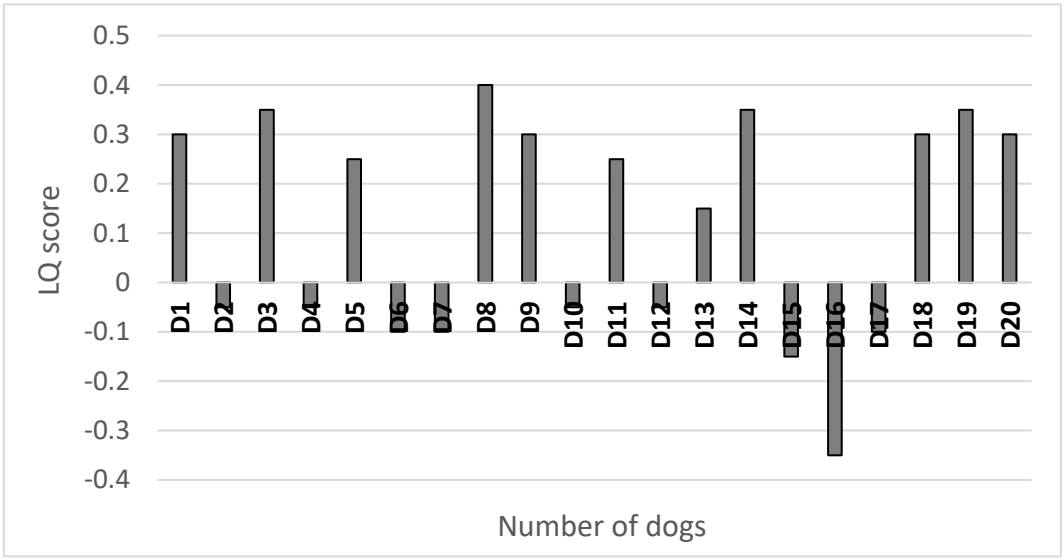

Figure 1. The LQ score obtained by each dog at the evaluation

The maximum percentage of positive indicators (65%) observed was recorded by D14, and the maximum percentage of negative indicators (40%) by dogs D15 and D16. The minimum percentage of positive indicators (10%) was observed in animals D7 and D16, and the minimum percentage of negative indicators (0%) was observed in D3.

The average percentage of positive indicators was 29.25%, more than half of the dogs (55%) exceeding this value. The average percentage of negative indicators was 19.75%, nine of the animals (45%) evaluated registering a lower percentage (Figure 2).

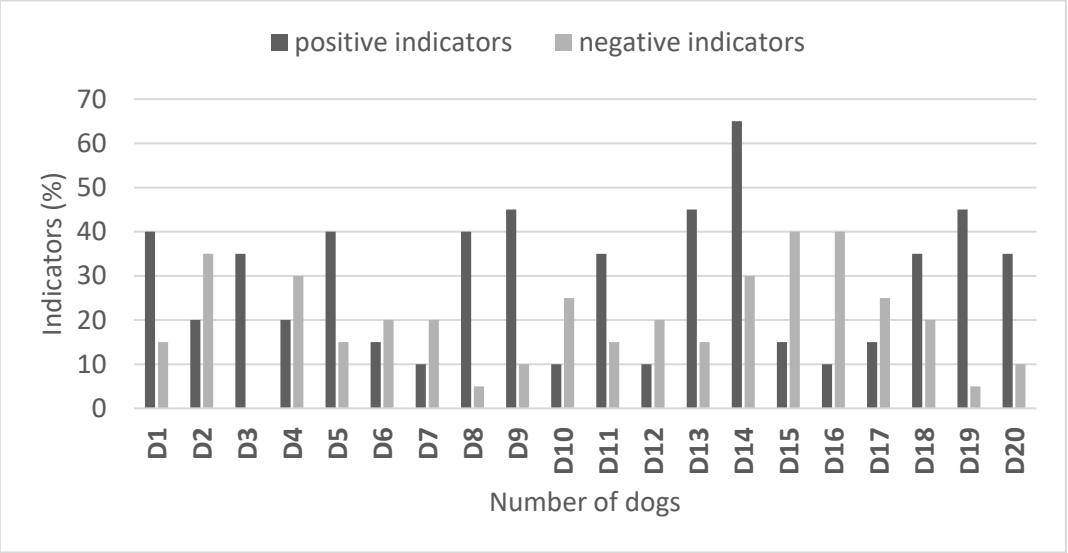

Figure 2. Proportion of positive and negatives indicators per animal

In other studies [14, 15, 20] a percentage of 2% or 30% negative LQ scores were reported compared to 45% obtained in this study.These results suggest a higher number of behavioral disorders in the dogs evaluated in our research. The lower scores obtained in our study could indicate the presence of chronic stress in the dogs or it could be the expression of possible traumas experienced by the animal before entering in the shelter. The dogs in a shelter can be exposed to chronic stress, because several stress factors such as social isolation, changes of the environment, excessive noises, physical restrictions [26, 27].

4.Conclusions

Canine behavior can be assessed within a reasonable time frame by recording the presence or absence of certain behavioral indicators. These recordings can then be processed to obtain a quality of life score for each animal. The quality of life score (QL) is a parameter that can be used to monitor the evolution of the same animal over time, and can also be used to compare the evolution of groups of animals. Additional studies such as the application of socialization programs are needed to gain more knowledge on the behavior of shelter dogs. This aspect is very important especially for animals in shelters that are subjected to a higher level of stress.

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