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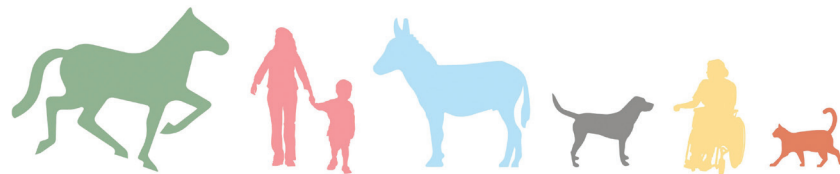
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Cover Page Footnote

Mahalo to the shelter workers who spent time with us and spoke from their hearts. We observed their caring and heard their words. Most of the dogs in this study were subsequently euthanized. I have their records and their hair, and perhaps this writing, as a testament to all shelter dogs. Mahalo to all the research assistants who got muddied, jumped on, and licked while collecting these data. Mahalo to Dana-lynn Ko'omoa-Lange, PhD, for assistance with the cortisol analysis and Julie Luiz Adrian, DVM for behavioral insights. Mahalo to Dr. Becky Ostertag for her review of this article and assistance with the statistical analyses. Kea and numerous other family dogs helped us establish our cortisol analysis protocol.



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It's Not Paradise for the Dogs and Shelter Workers: Dog Welfare and Occupational Stress in Animal Shelters in Hawaii

*Lynn Morrison*¹

Keywords: euthanasia, shelter workers, stress, cortisol, interviews

Abstract Dog welfare and occupational stress of animal shelter workers at two sites on Hawaii Island were examined. The east side had higher euthanasia rates than the west side. The two sites are in locales that differ culturally and economically. The goal of this study is to (1) elucidate how dog culture differs at the two sites and how those differences affect the health of dogs, and (2) assess the stress levels of shelter workers who must simultaneously care for the dogs while often having to euthanize them. Interviews and cortisol were obtained from the shelter workers and cortisol was obtained from the shelter dogs. Cortisol is a stress hormone that can be measured in human and dog hair. The shelter workers and dogs in the east side of the island's high-euthanasia shelter had significantly higher cortisol rates than their counterparts in the west side's lower euthanasia shelter ($t = 6.051, df = 13, p = 0.001$ for the shelter workers and $t = 2.412, df = 42, p = 0.010$ for the dogs). Traditional and contemporary attitudes toward dogs as commodities to be kept as guard dogs or for hunting do not include spaying/neutering, resulting in unsustainably high numbers of discarded dogs entering shelters. Shelter employees care for animals that they are then forced to euthanize, referred to as the "caring-killing paradox." Shelter workers consequently withstand the worst of negative public perceptions of the high euthanasia rate for what is in actuality a community problem. I suggest that differing cultures of attitudes toward dogs negatively affect the health and welfare of both shelter employees and dogs. Decreasing the dog overpopulation through spaying/neutering and a cultural shift in the attitude toward dogs would improve the health and well-being of the dogs and the shelter workers.

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Introduction

Currently in the United States, 38% of households have approximately 78 million dogs (AVMA, 2022). Many of these dogs live in underserved communities where there is little spaying/neutering or veterinary care. Despite the beneficial outcomes of having a pet as a family member, many animals in the United States are surrendered to animal shelters where they remain homeless and unwanted (Lamon et al., 2021). The Humane Society of the United States estimates 3 million dogs and cats are euthanized each year, the majority of whom are healthy. Animal welfare and rights activists regard this as an unconscionably high rate, causing needless stress and suffering for the animals before their demise and significant stress for those animals that continue to live in shelters (Humane Society of the United States, 2023). Shelters in Hawaii, as in many states in the continental United States, have a very short minimum length of stay of 48 hours before an unclaimed animal can be euthanized; however, some animals may spend several months in animal control (Hawaii Police Department, 2023). This practice highlights the high volume of animals in shelters and the cost of care that is not supported by communities or municipalities. It is *not* reflective of the indifference of shelter workers, a common public misperception (Balcom, 2000). Often ignored is the emotional and negative health toll the high euthanasia rate may have on the shelter workers who care for and, consequently, often euthanize the dogs as part of their job responsibilities (Arluke, 1994; Anderson et al., 2013; Andrukonis & Protopopova, 2020; Baran et al., 2009; Rogelberg et al., 2007).

The “caring-killing paradox,” a term coined by Arluke (1994), refers to the severe work strain shelter workers in high-euthanasia shelters experience. The term describes the conundrum that many shelter workers find themselves in: they are drawn to the job because they love animals; they care for the animals in the shelter by feeding them, tending to their injuries, and being responsible for their overall safety and well-being; but in many cases, they are also responsible for euthanizing them. Studies have identified the prevalence of euthanasia-related strain

among shelter workers that contributes to increased job stress, burnout, somatic complaints, substance abuse, and suicide (Andrukonis & Protopopova, 2020; Rogelberg et al., 2007).

The State of Hawaii ranks 25th out of the 50 states with respect to public policies dealing with animal cruelty (Human Society of the United States, 2023). In June 2013, then-Governor Abercrombie signed six bills to ameliorate animal welfare. Despite this, the weak set of policies are rarely acted upon and animal abuse continues to be pervasive. The island of Hawaii, which is largely rural with a culturally valued tradition of hunting and guard dogs, has especially high rates of unwanted dogs (Morrison et al., 2021). With few exceptions, there is not a supportive dog culture on the island. For example, there are few dog parks and dogs are prohibited in most state parks and other public areas. More significant is the overt neglect and abuse of dogs, which is evident by the number of discarded dogs in our community. Until 2021, most of these dogs ended up at three island shelters where high rates of euthanasia was an outcome of animal overpopulation within the shelters. The number of unwanted dogs is especially high given the lack of spaying and neutering, despite the significant efforts of animal-oriented nonprofit organizations.

In 2014–2015, we (the author and numerous research assistants) examined dog welfare and occupational stress among animal shelter employees at two sites on Hawaii Island, one of which had significantly higher euthanasia rates than the other. The two sites are in locales that differ culturally and economically. These two study sites, Kea’au and Kona, are on opposite sides of the island with distinctive demographics. Kea’au, on the east side of the island, has a more depressed economy with higher rates of unemployment. Homes often have multiple dogs staked out separately on short chains. Hunting is a deeply rooted part of the local culture of Hawaii, especially on the east side where there is a preponderance of hound dogs and pit bulls used in the hunt. These dogs are considered discardable and are often underfed in preparation for a hunt (Morrison et al., 2021). There are more lost, injured, or discarded hunting dogs in the Kea’au shelter than in the Kona

shelter. In contrast, Kona is on the west side of the island with an elevated socioeconomic status and standard of living. Although there are guard and hunting dogs in Kona, there is an evident prevalence of family dogs. Kona is a high tourist destination catering to U.S. mainlanders, many of whom relocate, with their companion dogs, to the west side of the island of Hawaii. The Kona shelter has a greater mix of companion, guard, and hunting dogs than Kea'au.

Anthropology has a long history of developing and implementing qualitative data collection techniques, which are particularly useful in deriving information on sensitive issues (Bernard, 2017; Ervin, 2005). The method best suited for our purposes was a semistructured interview guide to elucidate how shelters workers exposed to animal neglect and euthanasia cope with their jobs and to gain a better understanding of how different cultural and socioeconomic environments affect dog welfare.

Assessing stress in humans and dogs by analyzing cortisol levels is well established (Brown, 2016; Heimbürg et al., 2019; Hennessy et al., 2001; Lamon et al., 2021). Cortisol is the major glucocorticoid hormone in mammals that is released in response to stress and suppresses the immune system. Cortisol is a useful indicator of stress in humans and of a potential predisposition to negative physical and mental health outcomes such as weight gain, high blood pressure, osteoporosis, sleeplessness, and irritability. Salivary cortisol, long used to assess stress in humans (Pollard & Ice, 2007), is also a valid indicator of chronic, as well as acute, stress in dogs and is currently used in assessing the welfare of dogs (Beerda et al., 1996). For example, dogs in long-term shelters generally had higher than normal cortisol levels, indicating stress, but those confined with other dogs exhibited more social behaviors such as play and exploration (Dalla Villa et al. 2013). Testing hair instead of saliva has recently been established as an equally valid measure of chronic social and physical stress in humans and dogs (Bryan et al., 2013; Ouschan et al., 2013; Wright et al., 2015). Further, when working with dogs, hair is far more practical and less invasive to obtain than saliva. Additionally, since hair cortisol is an indicator of chronic stress in the previous

3 months, it does not have the diurnal variances that saliva cortisol has.

The goal of this study was to (1) elucidate how dog culture differs at the two sites and how it affects the health of dogs, and (2) assess the stress levels of shelter employees who must simultaneously care for the dogs while often having to euthanize them. The shelters were supportive of this project and allowed us access to both staff and dogs at the Kea'au and Kona sites. Our data set included interviews with the shelter employees to gain a better understanding of their daily work and their thoughts on animal welfare on the island. We also took hair samples of humans and dogs to analyze cortisol, a stress hormone. Our hypothesis was that the Kea'au shelter employees would have higher stress levels than the Kona shelter employees as measured by cortisol. We also hypothesized that the Kea'au shelter dogs would have higher stress levels than the Kona shelter dogs as measured by cortisol.

The relevance of our proposed study is the applicability of the results not just for human health and occupational well-being but toward a greater understanding of dog welfare in varying contexts. Overall, the empirical data derived from this study will be of particular value to animal advocates in addressing stress in dogs living in areas of high neglect and abuse.

Methods

Ethics Review

Approval by the University of Hawaii Institutional Review Board (IRB) and from the Institutional Animal Care and Use Committee (IACUC) was obtained. The names of the respondents have all been changed to protect their identity.

Humans received a \$30 gift card to Target. The dogs received treats and caresses, and some got short walks.

Participants and Procedures

To assess work-related stress and to gain a better understanding of dog welfare on the island, we used a

mixed-methods research design at the 2 main shelter sites on the east side and west side of the island, Kea'au and Kona, respectively. The author and one of several research assistants on this project collected the interview data and hair cortisol samples from both the humans and dogs. The shelters also shared their intake and disposition of animals' data. A basic dog ethogram was also taken to record the dog's demeanor and general state of health, as well as response to humans. We also collected information on the age, sex, weight, breed, and whether the dog was spayed or neutered. The 16 staff members, 8 at each site, included a humane educator, shelter managers, vet techs, kennel hands, dispatchers, and front desk employees at each site. See Table 1 for human participant characteristics.

The semistructured interview guide for the staff included questions about their motivation to work at the shelter, their job responsibilities, what they liked/disliked about their jobs, whether they euthanized animals, how they felt about and responded to euthanasia, what a typical work day was like, and whether they felt the two sides of the island differed in their attitude toward dogs and, if so, why these differences might exist. The interviews, which were recorded and later transcribed, took place at each of the two respective shelters and lasted about 1 to 1.5 hours. After determining a coding scheme, each interview was coded and then entered into QSR NVivo, a

qualitative analytical software program (Bernard, 2017; QSR NVivo, 2018; Taylor et al., 2015). After several iterations of analysis of coded data, themes were developed.

To compare the health of the dogs and their stress levels in each of the two locations, we purposely chose those dogs who visually appeared to be the most neglected, abused, or injured. Because hair cortisol reflects the last 3 months of stress, this is a good indicator of the dogs' stress levels before coming to the shelter as most were there for several days to under 2 weeks (Bryan et al., 2013). To collect a minimum 50 mg hair sample, we groomed the dogs with a FURminator brush while feeding the dog treats, speaking quietly, and petting them. The hair was taken from the nape and shoulder areas of the dogs. For dogs with short hair, like many of the pit bulls, we also used scissors to obtain a 50 mg sample of hair.

To obtain a minimum 50 mg of human hair, the participants' hair was cut close to the scalp using scissors from two to three areas in the back of the head so as not to leave an evident divot.

All hair samples were washed twice with distilled water, dried, and then washed twice with isopropanol. This step was especially important for the dog hair samples to remove dirt, fleas, and other substances. We then finely cut the hair samples to obtain 50 mg. In order to determine the cortisol level in each sample, ELISA (enzyme-linked immunosorbent assay) tests were performed using standardized kits from ALPCO. Procedures outlined by the ALPCO kit designed specifically for hair analysis were closely followed (<https://www.alpco.com>).

Table 1. Participant Demographics ($n = 16$)

Participants	Kea'au ($n = 8$)	Kona ($n = 8$)
Ave. age	43	27
Sex		
Female	5	4
Male	3	4
Ethnicity		
Caucasian	3	3
Hawaiian/mixed	2	2
Other	3	3

Results

Shelter Characteristics

As can be seen in Table 2, the Kona facility, which is a smaller facility, has a much lower total intake than Kea'au. Notably, Kea'au has an overall higher rate of euthanasia with 71% of animals coming in to the shelter being euthanized. Kea'au dogs have a 52.7% euthanasia rate compared to 16.7% at Kona. Kea'au

Table 2. Intakes and Outcomes for Kea'au and Kona Shelters, 2015–2016

Intakes and Outcomes	Kea'au 2015				Kona 2016			
	Dogs	Cats	*Other	Total	Dogs	Cats	*Other	Total
Total Intakes	3,700	3,850	876	8,426	1,353	1,583	1,669	4,605
Adopted	1,091	436	77	1,604	837	542	31	1,410
Redeemed	556	27	1	584	233	26	4	263
Euthanized	1,951	3,351	717	6,019	226	770	1,481	2,477
**Other	102	36	81	219	57	245	153	455
% Euthanized	52.7	87	81.8	71.4	16.7	48.6	88.7	53.8

*Horses, rabbits, guinea pigs, chickens

**Transferred, died, stolen, missing records

has a 30% adoption rate for dogs while Kona has a 62% adoption rate for dogs.

The overall greater intake of animals at the Kea'au site results in an average of 23 animals being euthanized per day, with an average of 7.5 dogs per day based on a 5-day work week (260 days), while Kona euthanized 9.5 animals per day with an average of 0.87 dogs per day. This is a notable difference in the emotional load shelter workers carry. The other numbers to highlight are in the “Other” column. Of the total of 102 and 57 for Kea'au and Kona dogs, respectively, 44 Kea'au and 12 Kona dogs were either released to local animal sanctuaries or flown to mainland shelters with high adoption rates, primarily in Oregon and Washington.

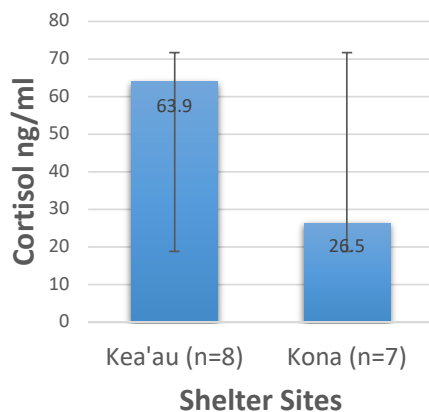
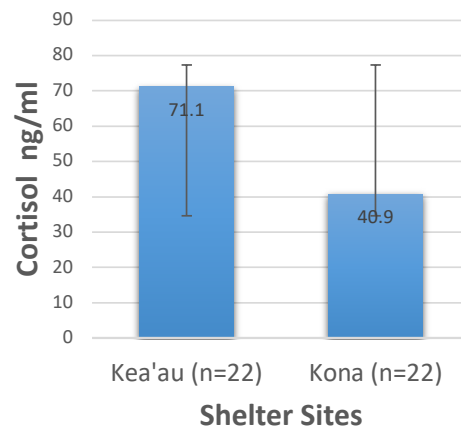
Human and Dog Cortisol

When analyzing for differences in cortisol, the Kea'au staff had a significantly higher mean cortisol level than the Kona staff ($t = 6.051$, $df = 13$, $p = 0.001$; see Figure 1).

The Kea'au dogs had a significantly higher mean cortisol level than the Kona dogs ($t = 2.412$, $df = 42$, $p = 0.010$; see Figure 2).

Interview Data

The qualitative data contributes to a more holistic understanding of the sociocultural environmental context from which the dogs came. Additionally, the

**Figure 1.** Human hair cortisol levels**Figure 2.** Dog hair cortisol levels

one-on-one interview guide focuses on the everyday life of shelter workers and how this community problem of unwanted and discarded dogs affects them. The relevant themes that emerged from this data include the act of euthanizing and its effects, strategies to cope with work stress, overpopulation, and neglect.

I'm Really Good at It: The Act of Euthanizing and Its Effects. Most of our participants, except for 2 managers (one from each site), were kennel hands, front desk, or both, or strictly animal control. All of the shelter workers in our study sought a job with the local shelters because they had an affinity for animals and were looking for work. In Kea'au, euthanasia was a mandatory part of their job responsibilities. At the Kona site, it was the animal control officer's responsibility to euthanize the animals. Nonetheless, the emotional stress was still evident in the noneuthanizing shelter workers. One of the Kona staff members said:

A lot of people [job applicants] think they're coming to like pet dogs and cuddle with them and something and they don't know it's actually like a pretty rough job emotionally when you see like you get attached to a dog and then they have to euthanize it.

Staff at the Kea'au site started their day euthanizing animals that had reached the extent of their time at the shelter. Unlike the Kona staff, the Kea'au staff predominantly spoke about the practical skills they had developed to euthanize an animal. The *perceived* burden of the procedure was significant enough that almost all of the staff insisted they did most of the euthanasia. One of the staff at Kea'au felt it was more traumatic knowing that someone less experienced than her might be doing the procedures. She said:

One of the reasons why I do the majority of the euthanasia is because I'm really good at it and that means that I'm gonna suffer less if I do it. . . . I just got really good at it. . . . I can really hit the little veins.

She suffers less because by doing it right, she knows the animal suffers less. To note, this employee had the highest cortisol level of all our participants.

Jimmy (Kea'au) stated: "I can euthanize up to 20 animals a day," with many of them being feral cats, which he feels is preferable to the cats starving or getting hit by a car. When asked how he continues to be able to euthanize animals, he said:

'Cause that's compassion, you need it. But you can't be overcompassionate where you're gonna hate yourself for everything.

Serena (Kea'au) said:

It's been really hard like when I first started to do the euthanasia . . . to take care then to kill. . . . Here you are cleaning, dropping food to them, then the next minute you're dropping them and they're gonna go in a bag.

The Kea'au manager stated: "It's pretty sad when you have to do that [euthanize] . . . kinda take the toll out on all the staff." Despite the high euthanasia rate at Kea'au, staff turnover was low with several staff having been there for over a decade. It was also noted that the number of euthanized animals had gone down significantly from previous years due to increasing spaying and neutering.

A lot of the stress also comes from community scrutiny and criticism about the volume of euthanasia with various staff members advocating for the dogs they like. A Kea'au worker (Hoku) said, "If I have 6 dogs that have to move up to adoption and I have 3 cages, that means 3 need to die. . . . The one who has been here the longest is the first to go." She also really struggled with knowing some of the dogs she put down were adoptable but their time was up.

In contrast, staff in Kona can spend time with the dogs. All of the staff in Kona agreed that there was minimal dog euthanasia and most animals euthanized were cats and mongoose. Todd (Kona) said he can get his work done so he "can just go in and hang out [with the dogs]." He especially likes to socialize the very scared and timid dogs so they will

have a better chance of being adopted. The staff at both shelters are not told which dogs get euthanized. They come in to work and if a particular dog is not there, that means the dog either got adopted or put down. Todd found this too difficult and stopped asking what happened to the dog as he found it emotionally easier to remain uninformed of the dog's disposition.

The Kona manager stated: "I will exhaust every other option before I get to euthanasia. . . . Only major aggression issues, major health issue with poor prognosis . . . will lead to an animal being euthanized." But the strain of this is an overwhelming problem. There are other times where she wonders, "When does it ever just slow down? . . . It doesn't. I mean, we're gonna be euthanizing every day."

I Pray, I Smoke, I Work Out: Strategies to Cope with Work Stress. Staff had a variety of ways to try to cope with their work stress and high euthanasia rates, especially at the Kea'au shelter. Serena (Kea'au) said, "I started going to CrossFit because of the stress from here." She also said, "I go play with the animals, hang out with some of them that need extra care." Todd (Kona) also likes to be with the dogs if he is feeling stressed. As a recently recovered substance user, he found it was important to have positive coping strategies. Other than smoking a lot, he said, "When I'm upset about something, they [the dogs] don't care. . . . I let them crawl over my lap."

Hoku (Kea'au) stated: "I haven't yet went a summer without smoking." This participant said that during the summer, the number of animals coming in to the Humane Society skyrocketed.

David (Kea'au) said, "My wife . . . she has been the pillar." He also said seeing the animals get adopted was rewarding: "I see these guys go home. . . . Animals are moving." For the almost 30 years he was at the shelter, he was a heavy smoker; he quit right before retirement.

Jimmy (Kea'au) had difficulty leaving work behind. He stated, "I pray for a lot of animals that come in here, that their lives are in pain." He goes home and drinks to help with the stress.

Others, like Karla from the Kona shelter, work out and try to eat a healthy diet, which is in sharp contrast to the Kea'au staff who rarely even eat before coming to work, as their day starts with euthanasia, and often have fast food for lunch.

It's the Employees You Got to Work Around: Staff Relationships. Several respondents identified work strife with co-workers as being a greater source of stress than euthanizing animals. Hoku (Kea'au) says, "People work here because they need jobs," so they are not as invested in animal care as she is, which causes conflicts. Hoku noted that her male colleagues were less likely to go out of their way to help an animal and would sometimes leave dogs in the back of their pickup trucks in the heat while they went on break rather than bringing the dogs to the shelter and then going on break. Similarly, she said the male animal control officers are less likely to prioritize an injured cat if it means rearranging their tasks. She said, "Guys don't work here because they love animals. . . . It's for a paycheck. . . . The women that work here love animals."

Serena (Kea'au) stated, "It's not the animals, it's the employees you got to work around." Due to staff turnover, she found adjusting to new workers was very difficult and felt that they, herself included, all had "our own little issues." She elaborated: "Here you been doing it for 5 years and . . . it hasn't been a problem for anybody and then they [new worker] go and say something and you know, it just doesn't work that way." Similarly, Dave (Kea'au) said, "Always staff issues . . . staff getting along."

Joey (Kona) does not like cats and had difficulties with the cat volunteers. He commented about one volunteer that after he cleaned the cat cages, "She'll come in and the cats and her will f—k everything up." Joey found more solace with the dogs and spent all his free time in the kennels petting the dogs.

It's a Community Problem: Overpopulation and Neglect. A source of pervasive stress for the shelter workers at both sites is the negative and hostile perception the public has of them. The animal shelters are held responsible for the large number of

animals being killed when, in fact, the lack of spaying and neutering is a community problem. The intentional abuse and neglect of dogs, especially hunting and guard dogs, is a deeply held cultural issue that is resistant to change.

As the Kea'au staff member David stated:

This whole deal about overpopulation, and high euthanasia rate . . . it's a community problem. . . . You wanna put something nasty about us in the newspaper . . . but please come up with a solution.

In response to the negative public attitude toward shelter staff, David stated: "So, you're saying we don't love animals 'cause we're in this business? Wrong . . . wrong."

Karla (Kona) added, "We have had some really bad press . . . which has led to some stereotyping that we are a kill shelter . . . which leads to a lot more stress internally. . . . We had people protesting outside our doors with pretty awful signs." To combat the mistrust, she went to one of the impoverished communities known to have difficulties in general and offered them "free leases, collars, deworming, toys, and free spay and neuter."

How Did Anybody Ever Let This Animal Get This Bad: Culture of Dogs. How dogs are valued, or in this case, undervalued, differs cross-culturally. To get an understanding of the pervasive dog neglect on our island, we asked the shelter workers, "Why are some dogs neglected and abused?" and "Do you think there are differences in how dogs are treated on either side of the island?" The following gives insight into the overall issues.

David (Kea'au) said, "Some people don't get very well educated about how to treat their dogs." He talks about the previous generation being sugar plantation workers who had working dogs for guarding or hunting. The dogs would get fed, and sometimes kicked or beaten, and would never be let in the house. He also thinks that the east side of Hawaii, where Kea'au is located, has more drugs, which he feels is connected to the high number of guard dogs to ensure no one breaks into their homes. Jimmy

(Kea'au) concurred with David. He stated: "It's cheaper to live more rural, you can do whatever you want and people have guard dogs [because] they're hiding something, or trying to keep it."

He commented on how dog breeds differed between the two locales with the Kea'au side having more pit bulls and the Kona side having more golden retrievers. Oscar (Kona) adds, "They're a little more country and antigovernment down in [the east side]. They don't want people meddling in their business, that's why they moved there." They are more likely to guard their privacy with pit bulls and mastiffs tied up around the property.

Hoku (Kea'au), whose job it was to pick up yard dogs and unwanted litters, remarked on the overpopulation of unwanted dogs: "Their dogs just breed rampantly and they just get rid of them as they come." She also said:

I think it's money and social status. . . . The people in Kona treat their animals more like family members. . . . They seem to even like their hunting dogs. Over here [east side] they seems more disposable.

She continued to say that on the east side, everyone feels entitled to receive benefits without working for them and have little regard for what they have, including their dogs, who are tied to stakes on their property to guard what little they have. She said the dogs that are chained up all their lives are the most worrisome when they break loose:

They don't know how to act . . . and those are the ones that shred all the neighbors' pets and children.

Ben (Kea'au) stated:

I think a lot of people have issues . . . and are not necessarily capable of taking care of themselves, let alone another dog.

Although interviewed separately and in different locales, Todd (Kona) concurred with Ben. He stated

that the west side “is wealthier,” and that people on the east side lack education “and most parents don’t even care about [their kids],” so they really are not caring for the dogs.

Danielle (Kea’au) felt the east side had a lot of poverty and drug abuse, which ultimately affected how dogs were treated when people themselves are struggling. Other respondents like Reya (Kea’au) said that people seem to have a “different relationship with their animals” on the Kona side and that overall, the “feeling” and “vibe” are different. Similarly, Karla (Kona) reflected that the west side does not have the level of poverty that other areas have so Kona dogs “are sleeping inside, have good skin, and good body weight.” They are not sleeping on cement, chained to a post.

When asked about hunting dogs, Ben (Kea’au) noted that many of the dogs are kept thin, but that

people use their dogs to catch pigs. That way, they have the meat to sell to provide for their family, as well as [feeding] the dogs.

Lastly, Karla pointed out that seeing the abuse and neglect of animals has made her look at her own community very differently. She poignantly stated, “It gives you a different perception of the people within your community, like ‘how did anybody ever let this animal get this bad?’”. This question plagues animal rescuers and shelter workers on the island.

Discussion

This study examined two demographically diverse shelters, one with a higher rate of euthanasia, to determine whether the shelter employees and dogs had different stress levels as measured by their cortisol levels. Additionally, we explored shelter workers attitudes toward their job, euthanasia, their coping strategies, and asked for their insights on dog overpopulation, abuse, and neglect, and whether it differed in the two locations. Our findings indicate important differences in euthanasia rates between the two shelters, thus affecting workers’ attitudes toward their job,

their stress levels, and significant differences in dog stress as measured by cortisol levels.

Pet overpopulation in the United States has been addressed by either rigorous spay/neuter policies, extensive euthanasia, or a combination of both, depending on state funding and animal welfare regulations (Andrukonis & Protopopva, 2020). In states like Hawaii, especially the county of Hawaii, where euthanasia rates are especially high, a community and governmental effort to change pet overpopulation through increased spay/neuter policies is lacking. The county government, which funds animal control, has an ineffective budget for spaying and neutering or for public animal welfare education. These limited political and fiscal factors, combined with long-held cultural traditions of regarding dogs as discardable and expendable, results in too many unwanted, neglected, and abused dogs in the county shelter system with little money or staff to adequately care for them. Regrettably, the most pragmatic answer to the high volume of dogs entering these municipally funded shelters in Hawaii is to euthanize them.

Community members often hold the shelter workers responsible for euthanasia with public protests and media outcries. More to the point, with minimal spaying and neutering of household animals and pervasive backyard breeding, communities do not hold themselves accountable for pet overpopulation. As in other studies (Reeve et al., 2005), staff at both shelters experienced discrimination and social stigma from the public to the extent that some did not want to wear their work shirts in the community. Public awareness and education needs to be part of the animal welfare strategy to make the community understand that pet overpopulation is a community problem that is shouldered by animal shelter staff.

Additionally, the shelter staff forced to euthanize and caught in the ethical conundrum of the “caring-killing paradox” are rarely considered (Arluke, 1994). As Rogelberg et al. (2007, p. 332) poignantly state: “Euthanizing nonhuman animals is a physical act, a technical act, an emotional act, and—by its very nature—an act putting the animal care employee in direct contact with death.” In some cases, as in one of our shelters, euthanizing animals was a regular

and predictable part of their day, starting at 8 a.m. A study of 54 shelter managers in the United States found that on average shelters euthanize 896 dogs and cats annually (Anderson et al., 2013). Shelter workers reported sadness, crying, anger, and depression. To highlight the enormity of the burden of euthanasia on the island of Hawaii, the Kea'au shelter euthanized 5,302 dogs and cats in one year, almost 6 times the amount cited in the Anderson et al. (2013) study, and the Kona shelter euthanized 996 dogs and cats, also surpassing the above average of 896 dogs and cats.

The hair cortisol analysis indicated that the Kea'au staff, which had an 82% euthanasia rate, had a significantly higher level of cortisol than the Kona staff that had a 54% euthanasia rates. In fact, the mean cortisol level of Kea'au staff was twice as high as the mean cortisol level for Kona staff, indicating higher stress levels for the Kea'au staff. A major difference in job responsibilities between the two sites is that at the Kea'au site, most staff had to euthanize while at Kona, it was delegated to one or two workers. In both cases, however, staff came to work never knowing whether the animals they had cared for the previous day would be euthanized or already gone, which exemplifies the "caring-killing paradox" in which shelter workers experience severe work strain from caring for the animals and either euthanizing them or knowing they were euthanized (Arluke, 1994; Reeve et al., 2005). The majority of the dogs euthanized, while underfed and in some cases showing signs of abuse, are nonetheless friendly and responsive to humans, which amplifies the stress associated with euthanizing them simply because they were unwanted and the shelter facilities were overcrowded. There are few jobs that have the emotional, moral, and ethical dilemmas associated with killing what you cared for.

The significantly higher cortisol levels in the Kea'au dogs indicate a long period of chronic stress, likely reflecting abuse and neglect *before they entered the shelter*. We spent time petting and grooming the dogs to get their hair samples. Most were younger, all were emaciated, and some had evident injuries like rope burns around their necks. Studies have shown that shelter dogs that exhibit behavioral stress often have higher biomarkers of stress as seen with

cortisol (Dalla Villa et al., 2013), while other studies of companion dogs compared to guard dogs show lower cortisol levels for the companion dogs (Morrison et al., 2021). The cortisol data suggests that the dogs entering the shelters do not come from homes where they were companions but were likely hunting, guard, or backyard dogs that had little interaction with humans. The visual appraisal confirms that the dogs in our study were not well cared for and the neglect was chronic. The work of Coppola et al. (2006) suggests that human interaction can reduce cortisol levels for the dogs, but our study suggests that the dogs entering these shelters have had very little positive human interactions.

The interview data confirmed that staff at both sites had difficulty in coping with the high rates of euthanasia. The Kea'au staff had many more hours of euthanasia than did the Kona staff. Our respondents also indicated that it took a lot of experience to humanely euthanize with minimal distress and pain for the animal. An in-depth study found that conducting euthanasia is a unique work strain that has a negative effect on overall well-being and that individuals may be affected in unique ways (Reeve et al., 2005). We suggest that in our study, some of the work-related discordance may be related to the euthanasia-related work strain as the staff who euthanize may resent those that do not and conversely, noneuthanizing staff may blame euthanizing staff for killing a favored dog, cat, or rabbit. The discordance may be manifested in more superficial ways in order to avoid a conversation about the pervasive euthanasia, which all staff are powerless to change.

Veterinary staff, shelter workers, and research staff identified work-related distress based on aversive work conditions, client/owner difficulties, and euthanasia (Baran et al., 2009; Bennett & Rohlf, 2005). Interestingly, this aligns with our findings with the unexpected corollary that some of our participants identified aversive work conditions, which in our case was negative relationships with co-workers. An important distinction, however, is that with the exception of the research staff and shelter workers, the veterinary health care workers in the Bennett and Rohlf (2005) study primarily euthanized elderly

or severely injured animals. Shelter workers in our study and theirs were subjected to euthanizing relatively healthy animals who were simply unwanted, with 11% of the Bennett and Rohlf (2005) participants experiencing moderate traumatic symptoms.

A study looking at numerous occupations involved in animal euthanasia found that euthanasia-related strain was lower for those with good social support and with increasing length of time in their occupation (Bennett & Rohlf, 2005). Participants in our study stated they coped with work-related stress in a variety of ways, including working out at the gym or drinking caffeine and smoking. Additionally, work strain can often result in maladaptive coping strategies such as alcohol and drug abuse, dissatisfaction with the job, or strife at work or at home (Reeve et al., 2005). Several of our respondents reflected that they smoked or used substances to cope with their job stress. Bennett and Rohlf (2005) also found that longevity in the occupation lowered stress associated with euthanasia, perhaps indicating that exposure results in adaptive responses. In contrast, our cortisol and interview data both indicate that all of our respondents, including some who had been there 5–10 years, were still struggling with euthanasia. Interestingly, Bennett and Rohlf (2005) report that females reported more stress than males. One of our participants felt strongly about the males not doing their job as efficiently as the females, and she was adamant that the male workers put their own needs and comfort before those of the animals.

Our study indicates differences in dog culture between the two socioeconomically and demographically different sides of the island where the west side with more money and a more continental, positive attitude toward dogs had better outcomes for both the shelter workers and the dogs than did the east side, which is more economically depressed and has a strong local influence that is not as supportive of animals. The east side also has much bigger parcels of land where up to 10–12 dogs are kept either chained or loose, whereas Kona has smaller land parcels that are in neighborhoods where others can see how the animals are treated. There is also more hunting on the Kea'au side during which dogs get injured,

gored, and cut up. Additionally, dogs are sometimes purposely underfed or given drugs to “amp” them up before the hunt (Morrison et al., 2021). Hunters will often perform their own field surgeries with staple guns and stitching up of the dogs. To be noted, the east side has had several fatalities and critical maulings in the last several years killing a senior woman and significantly disfiguring a young girl (<https://www.civilbeat.org/2022/11/husband-sues-pit-bull-owners-for-wrongful-death-after-wife-dies-from-dog-attack-2/>; <https://www.hawaiinewsnow.com/2021/11/16/graphic-family-calls-tougher-laws-following-dog-attack-that-left-girl-seriously-injured/>). Our findings indicate important differences in euthanasia rates between the two shelters, thus affecting workers' attitudes toward their job, their stress levels, and significant differences in dog stress as observed and measured by cortisol levels. Workplace stresses and dog health and welfare differences are rooted, in part, in the differing sociocultural and economic contexts that exist on either side of the island.

Current Status of Animal Control in Hawaii

At the time of the study, staff remarked that there had been improvements over the last 5–7 years with ameliorating relationships with the community. Both the Kea'au and Kona sites developed Bark Parks for anyone to come and let their dogs off-leash. On an island where there are few places that allow dogs, including state parks and beaches, a communal park is welcomed by dog owners. Currently, the two shelter sites where the study took place are now operated solely by the Hawaii Island Humane Society, which has limited admission, staff trained in behavioral training and stimulation for the shelter animals, and low euthanasia rates. The Humane Society and other animal advocacy groups and rescue organizations regularly hold spay and neuter clinics.

The current Animal Control is housed within the police department with services focused on dangerous and aggressive dogs or badly injured animals.

Their general intake is limited with local rescues receiving many lost or abandoned pets. Animal Control continues to rely on flying dogs out to the continent, although this a financially and logistically limited solution. Our island continues to have a severe problem with cat and dog overpopulation.

Summary for Practitioners

Animal grief counseling, internal support systems, increased euthanasia technical training, and emotional regulation and withdrawal strategies have been suggested to improve the well-being of shelter workers (Baran et al., 2009; Reeve et al., 2005). Talking about euthanasia should be part of the staff's initial training as well as monthly supportive debriefings. In a study on euthanasia in 62 shelters in the United States, which included 305 shelter employees, Rogelberg et al. (2007) report the primary suggestion to assist shelter workers was management supportiveness. This was followed by counseling, job rotation, breaks, time off, and other supportive mechanisms to help them cope.

Some respondents in our study acknowledged an enormous responsibility in conducting the euthanasia because they felt their better training would decrease the animals' suffering. Better training of staff performing the euthanasia would alleviate some of this work-related stress, as echoed by the findings of Rogelberg et al. (2007) in which shelter workers requested more staff and more skills-based training to do the job thoroughly. They also requested training in emotion-based coping, which would help all shelter workers.

More significantly, Beck and Katcher (2008, p. 85) state: "For animal welfare and basic scientific reasons, it is time to conduct studies on the possible health effects that people have on animals." In response to that, our study provides biological evidence of stress in dogs who have had negative interactions with humans. The focus needs to shift to decreasing dog overpopulation with affordable and accessible spaying and neutering. The more difficult issue is to shift the cultural attitude of regarding dogs as expendable to regarding dogs as sentient beings deserving a life

free of abuse and neglect. These goals can only be achieved with financial support for sterilization and educational and awareness programs. The outcome would be a much healthier human and animal community on the island of Hawaii.

Conclusion

Euthanasia is a unique responsibility among many shelter workers not shared with other high-stress professions, including emergency room health care workers or paramedics whose job is to help people get better. Animal shelter workers are in the unenviable position of having to euthanize healthy animals that they have often cared for. Our results thus far indicate that high rates of euthanasia coupled with a hostile community attitude leads to stress. The data from the shelter workers as well as the cortisol results from the dogs indicate that there are significant differences between the two sites, indicating differing cultural contexts for dogs. More significantly, we have conclusive evidence that neglected dogs suffer from chronic stress. This biological data validates what shelter workers and animal advocates already know. This information can perhaps contribute to better animal welfare legislation, more financial support for animal well-being, and educational programs to change attitudes toward animals.

At the time of this writing, U.S. shelters, including those in Hawaii, are overflowing with the post-COVID abandonment of animals, so the small gains made in decreasing euthanasia rates no longer exist. Our animals and their caretakers, the shelter workers, are experiencing unprecedented distress. It's not paradise for the dogs, for shelter workers, or for animal rescuers.

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