Caring Canines: Tackling the Problem of Burnout Among Healthcare Workers

Gretchen Wojtas-Johnson, RN[1*]

Matthew Dalstrom, PhD, MPH[2]

Rebecca A. Parizek, PhD, RN, CNL[3]

Lynette Castronovo, DNP, APRN, GNP-BC[4]

[1] DNP Student, Saint Anthony College of Nursing, Gretchen.S.Wojtas-Johnson@OSFhealthcare.org

[2] Professor, Saint Anthony College of Nursing, matthew.d.dalstrom@osfhealthcare.org

[3] Associate Professor, Saint Anthony College of Nursing, rebecca.a.parizek@osfhealthcare.org

[4] Associate Professor, Saint Anthony College of Nursing, lynette.m.castronovo@osfhealthcare.org

*Correspondence: Gretchen Wojtas-Johnson

Abstract

Purpose: Stress-reducing activities have been known to lower turnover and improve employee mood. Animal-assisted therapy (AAT) has been used to help patients through stressful situations; however, little research exists on the impact that AAT has on rural healthcare workers. The purpose of this project was to develop and implement an AAT program at three rural clinics in northern Illinois and assess the program's association with employee mood and burnout.

Sample: Sixty-five percent (n=28) employees participated in the study. However, two were lost to attrition.

Method: A dog-based AAT intervention was developed and implemented at three rural clinics. During the intervention, all participants were allowed to interact with the therapy dog for an undetermined amount of time over the lunch hour for ten sessions. The intervention was evaluated

using a pre/post-test design. Burnout was measured using The Copenhagen Burnout Inventory (CBI) at the beginning and end of the intervention, and mood was assessed using a one-item question before and after each session.

Findings: A paired sample t-test was used to assess changes in the three subscales of the CBI from the start to the end of the study and to identify mood changes. There was not a significant change in personal or work-related burnout. However, there was a decrease in client-related burnout from the beginning of the intervention (m=50.78, ±30.17) to the end (m=39.32, ±26.57, p<.001). In addition, average employee mood improved by 49.62% (p</=.004) after each session.

Conclusion: This pilot study suggests that implementing AAT within a rural clinic setting might improve healthcare worker (HCW) mood and decrease the risk of client-related burnout. More research is needed to determine the long-term impacts of these programs and their association with HCW well-being.

Keywords: Animal-Assisted Therapy, Burnout, Mood, Healthcare Workers, Rural Nurses

Caring Canines: Tackling the Problem of Burnout Among Healthcare Workers

Healthcare is considered one of the most stressful occupations; it is physically, psychologically, and mentally draining (Machová et al., 2019). Additionally, the COVID-19 outbreak has increased stress and reduced mood, raising the risk of burnout and decreasing engagement levels among healthcare professionals (Jose et al., 2020). Bethea et al. (2020) reported that burnout affects up to 50% of practitioners and 25% to 33% of critical care nurses. Moreover, according to the American Nurses Association (2024), nurses feel stressed (66%), burnt out (62%), and sad (25%). Rural nurses may be at higher risk for experiencing negative emotions (e.g., sadness, stress, depression, isolation, etc.) and developing burnout due to limited resources, lower pay, longer working hours, and hazardous driving conditions (Registered Nursing.org, 2024).

Therefore, developing and implementing low-cost, innovative interventions to support rural nurses is essential.

The surgeon general of the United States, Vivek Murthy (2022), describes burnout as an "occupational syndrome." The causes of burnout are multi-factorial (Shah et al., 2021). Some factors that contribute to burnout are anxiety, depression (Koutsimani et al., 2019), poor work-life balance, and resilience (Klein et al., 2020). There is also an association between employee mood and burnout (Chen et al., 2021). Too many work responsibilities, feeling unprepared or undertrained, and insufficient suitable equipment are some situations that predispose employees to burnout (Wichetwichai, 2018). However, burnout is an occupational syndrome, not a medical diagnosis (Khammissa et al., 2022; Murthy, 2022).

Researchers found that burnout is not feeling accomplished at work, leading to mental exhaustion and depersonalization (Murthy, 2022). According to Kristensen et al. (2005), there are three main categories of burnout: personal, work-related, and client-related or patient-related (Etingen et al., 2020). Personal burnout involves feelings of physical and emotional exhaustion and an increased susceptibility to illness. Work-related burnout is associated with exhaustion from work and lacking time for family and friends. Client-related burnout refers to feeling challenged, frustrated, or drained when working with the population served (Barton et al., 2022).

Burnout impacts a wide array of workers. However, healthcare workers (HCWs) are particularly vulnerable because of electronic medical records; high work demands and turnover rates; low staffing ratios and autonomy; poorly functioning teams, including poor nurse-physician interactions; shifts lasting longer than 12 hours; reduced professional efficacy and personal accomplishment; and moral distress (Carter & Bogue, 2022; Dall'Ora et al., 2020; De Hert, 2020; Melnyk, 2020; Schlak et al., 2021). The consequences of HCW burnout are extensive, including

decreased quality of care, increased medical errors, low patient satisfaction scores, potential litigation, and employee turnover (De Hert, 2020).

Addressing the challenges of employee burnout in health systems has been difficult because of workflow, the nurse and provider shortage, and increased clinical demands (Melnyk, 2020). Thus, small-scale, low-cost employee well-being interventions that can be incorporated into day-to-day activities with minimal disruption to workflow are popular (Melnyk, 2020). One such strategy is expanding animal-assisted therapy (AAT), commonly used with patients, to HCWs. AAT involves interacting with highly trained animals (dogs, cats, small animals, horses, reptiles) in a controlled environment to improve participants' emotional health. AAT has been used for many years to reduce stress and some risk factors associated with burnout (Koukourikos et al., 2019). In rural areas, AAT is commonly associated with equine therapy; however, in clinical settings, dogs are primarily used (Sakurama et al., 2023).

Within the healthcare setting, AAT has helped patients to feel joy, cope with loss, and remain in the moment, all of which are life skills that allow humans to cope with the world (Machová et al., 2019). Hediger and Hund-Georgiadis (2017) found that having on-site AAT provides patients, visitors, and employees with a sense of reassurance and relaxation. Moreover, patients noticed that staff had a more positive attitude (Hediger & Hund-Georgiadis, 2017). A study by Etingen et al. (2020) also demonstrated the positive impact of an AAT program on HCWs at a large Veteran Affairs (VA) Hospital. Participants who attended an average of nine out of 20 AAT sessions experienced reduced stress and improved mood. This suggests that organizations should consider using AAT to improve mood and to help decrease employee burnout. However, there has been little research on whether AAT can be implemented within small rural clinics or the impact that AAT might have on rural HCWs.

Purpose

The purpose of this project was to develop and implement an AAT program at three rural clinics in northern Illinois and assess the program's association with employee mood and burnout. Research suggests that healthcare organizations that offer stress-reducing activities have lower turnover and improved employee mood (Etingen et al., 2020; Klein et al., 2020; Melnyk, 2020; Schlak et al., 2021).

Study Design

The association between program participation and HCW mood and burnout was evaluated using a one-group pre/post-test study design. All clinic staff were invited to interact with a therapy dog during their lunch hour for 10 AAT sessions. Employee mood was measured before and after each session, and the level of burnout was assessed at the beginning and end of the intervention. All surveys were administered in paper form. The University of Illinois College of Medicine at Peoria IRB-1 approved the study. The intervention was implemented by a rural primary care nurse, a medical anthropologist, a clinical nurse leader, and a geriatric nurse practitioner.

Setting and Sample

The pilot intervention occurred at a rural healthcare organization (RHO) in northern Illinois. The RHO has nearly 1,200 employees and operates one critical access hospital and 15 clinics located across five counties in northern Illinois. These 15 clinics collectively serve an average of 1,500 people per day. The intervention was implemented at three of the 15 rural clinics with rural-urban commuting area codes (RUCA) ranging from 4 to 10, indicating that the clinics were in a variety of rural settings. See Table 1.

Table 1

Clinic Characteristics

	Clinic A	Clinic B	Clinic C
Clinic Characteristics			
Patient Volume Daily Average	200	33	26
RUCA Code	4	10	7
Town Population	22,934	1,700	2,670
Total Staff	26	8	9

Instruments

Demographics

Demographic information included clinic site, role, hours worked per week, years in role, gender, and if participants have a pet at home.

Mood

Mood was measured with a one-item, 5-point Likert-type scale question *How I am Feeling Now* (HIFN) immediately before and after each interaction with the dog. Participants circled the face and corresponding text that best described their mood: best (5), better (4), neutral (3), fair (2), and worse (1).

Burnout

Burnout was measured with the Copenhagen Burnout Inventory (CBI). The CBI is composed of 19 questions that measure three types of burnout: personal burnout, work-related burnout, and client-related burnout. For each category, the range is from 0 to 100 with associated values for degree of burnout: 0-24 *very low*, 25-49 *seldom*, 50-74 *sometimes or somewhat*, 75-99 *often or high*, and 100 *severe* (Borritz et al., 2006). Thus, the higher the number, the more burnout is present (Kristensen et al., 2005). According to Ogunsuji et al. (2022), in a cross-sectional survey

comparing the CBI to the Maslach Burnout Inventory, the CBI demonstrated high internal consistency and reliability.

Procedure and Intervention

Initial planning began with discussions with key stakeholders, including the Chief Nursing Officer at the health system and Operation Leaders at the three clinics. The principal investigator then worked with the rural healthcare organization's therapy dog coordinator to develop a scheduling and training/orientation process. The process familiarized the three dog handlers with the project goals and ensured the four dogs were at the clinic during scheduled intervention times.

The intervention was conducted during the fall of 2023. The intervention space depended on the clinic layout and availability. At Clinic A, AAT occurred in a 20' x 20' lobby extension with windows and comfortable chairs. In Clinic B, AAT occurred at the nurses' station, which was situated between exam rooms. At Clinic C, AAT occurred in the breakroom with a kitchenette, table chairs, and an area where staff could place their belongings. The intervention dates were selected based on clinic staff availability and occurred from noon to 1 pm when the clinics were closed for lunch. Clinics A and B had one session per week for ten weeks, and Clinic C had two sessions per week for five weeks.

Before the intervention, the principal investigator shared information about the intervention and the potential benefits of AAT with staff during an hour-long lunch and learning session. Those interested in joining the study signed the consent and were then asked to provide demographic information and take the pre-CBI. AAT sessions were held on the same day of the week, and a reminder email was sent to clinic staff the day before every AAT session. The therapy dog coordinator brought the dogs and handlers to the clinic, and all clinic staff were invited to interact with a therapy dog during their lunch hour for 10 AAT sessions. Employee mood was measured

with the How I Feel Now survey immediately before and after each AAT session. The principal investigator collected field notes and documented observations about program implementation and clinic staff interactions. After ten sessions of AAT, the participants' level of burnout was reassessed with the CBI.

Analysis

IBM SPSS® (Version 29) was used for descriptive and inferential statistical analysis. Descriptive statistics were used to analyze demographic data. A paired sample t-test was used to look for changes in mood before and after each AAT session. A paired sample t-test was used to look for differences in the three subscales of the CBI from the start to the end of the study. Independent samples t-test was used to determine differences in burnout based on demographic characteristics. The significance level was set at $p < .05$.

Results

Twenty-eight out of 43 (65%) clinic employees participated in the study. Two participants were excluded from data analysis because they only returned one pre-How I Feel Now mood survey. Demographic data was missing from one participant at clinic A. Clinic A had 12 (46.2%), clinic B had eight (30.8%), and clinic C had six (23.1%) participants. Most participants were female (n=21, 80.8%) and had a pet at home (n=19, 73.1%). Overall, AAT had an immediate positive impact on participants' mood. Unfortunately, although rare, some participants could not interact with a therapy dog because patient care ran into the lunch hour.
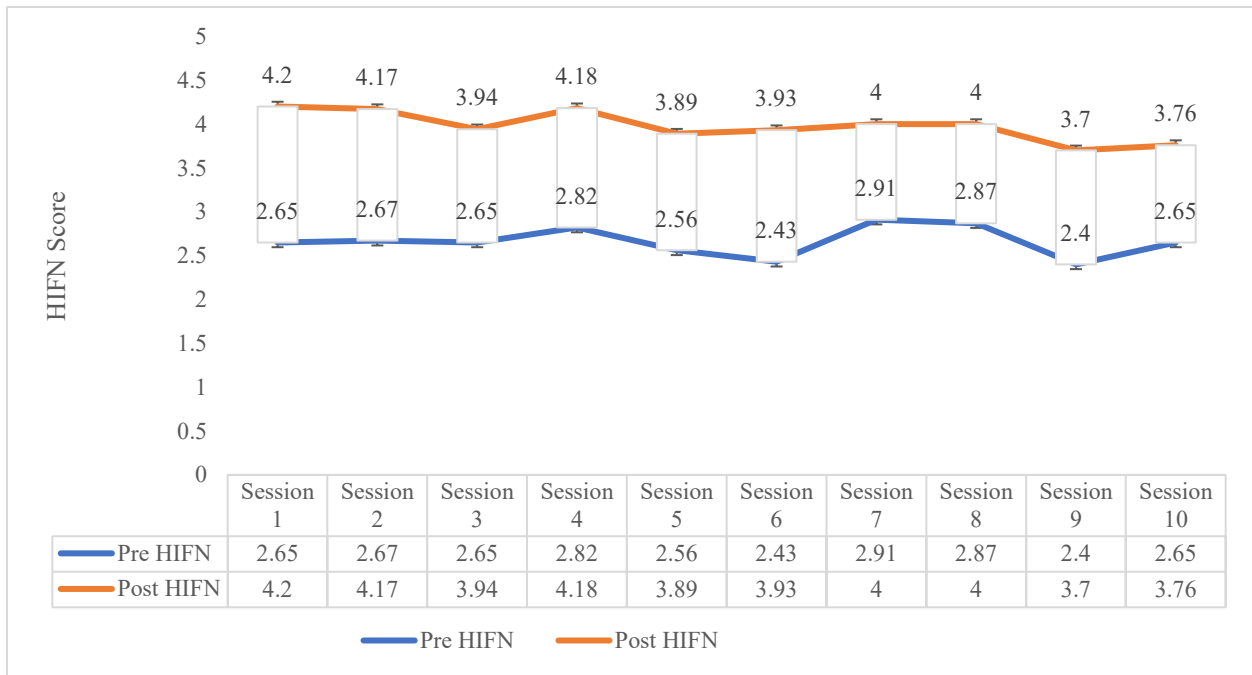
Table 2

Participant Demographics

	Clinic A	Clinic B	Clinic C
Participant Demographics			
Male	1	1	2
Female	10	7	4
Nurse	4	3	3
Other role	7	5	3
Has a pet	9	5	5

Mood

Participants attended between one and nine (m=5.65±2.67, mdn=6) of the 10 AAT sessions. Just over half of the participants (n=14, 53.8%) attended at least six sessions. Participation in at least six sessions varied from 75% at Clinic A, 50% at Clinic B, and 33% at Clinic C. More nurses (60%) attended at least six sessions than those in other roles (46.7%). Nurses attended approximately one more session (m=6.2±2.3, mdn=6.5) than those in other roles (m=5.2±2.9, mdn=5). Paired sample t-test found significant changes in participant mood before and after each of the ten sessions (p≤.004). Across all ten sessions, there was a 49.62% improvement in mood scores on the How I Feel Now survey from before interacting (m=2.66) to after interacting (m=3.98) with a dog. See Figure 1.

Figure 1

How I Feel Now Mean Mood Measurement

	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6	Session 7	Session 8	Session 9	Session 10
Pre HIFN	2.65	2.67	2.65	2.82	2.56	2.43	2.91	2.87	2.4	2.65
Post HIFN	4.2	4.17	3.94	4.18	3.89	3.93	4	4	3.7	3.76

Burnout

A paired sample t-test was used to look for differences in the three subscales of the CBI from the start to the end of the study. Client-related burnout (n=16) decreased significantly from "sometimes" at baseline (m=50.78±30.17) to "seldom" (m=39.32±26.57), t(4.119), p <.001 (two-tailed) with a 95% confidence interval ranging from 5.53 to 17.39 after the intervention. Client-related burnout also decreased significantly for the nurses (p=0.018) and those in other roles (p=0.048). There were no significant changes in personal burnout or work-related burnout. See Table 3.

Table 3

Copenhagen Burnout Inventory (N=16)

	Nurses			Other HCW			Overall		
	Pre	Post	Sig	Pre	Post	Sig	Pre	Post	Sig
Client-Related Burnout	57.74	47.62	0.018	48.96	36.98	0.048	50.78	39.32	<.001
Work-Related Burnout	59.82	60.72	0.843	54.02	56.70	0.563	55.04	57.35	0.433
Personal Burnout	49.48	51.04	0.740	55.60	55.21	0.603	50.74	52.21	0.637

An independent samples t-test was used to determine differences in burnout based on demographics. On all three subscales of the CBI, participants with a pet at home had lower burnout at baseline (m=42.87) and post AAT (m=44.49) than those without a pet at home (baseline m=66.30, post AAT m=70.88). Pet owners had significantly less pre-AAT client-related burnout (m=-30.99, p=.009), post-AAT client-related burnout (-30.87, p=.03), and post-AAT work-related burnout (m=-28.87, p=.029). There were no significant differences in burnout based on gender, role, or number of sessions attended.

Perceptions of the Intervention

Participant engagement and interest in the intervention were captured using field notes. The principal investigator did not receive or hear any negative feedback. Overall, as exemplified in the following comments, the participants enjoyed interacting with the therapy dogs at their clinic.

"We need more dogs!"

"How do we get more dogs?"

"We need to figure out a way to have a full-time clinic dog that is assigned to staff to take home on the weekends and when the office is closed."

"I just love it when the dogs come!"

"Dogs are great! They are so calming and make me forget about the day."

"It just brightens my day."

"Spending time with the dogs makes me feel very uplifted."

Discussion

HCW mood and burnout are two phenomena that affect patient care, employee retention, and job satisfaction (Terry & Je Woo, 2021). While the COVID-19 pandemic has exacerbated these problems, many underlying factors, such as high patient volumes, poor work-life balance, stress, and staff shortages, were present beforehand. To better understand the phenomenon, there has also been a significant amount of research conducted over the past decade on documenting the extent of the underlying problems associated with burnout (De Hert, 2020; Jose et al., 2020; Sexton et al., 2022; Shah et al., 2021; Sullivan et al., 2021; Terry & Je Woo, 2021). However, addressing the underlying causes of negative mood and burnout has been very difficult. Our study illustrated that participating in an AAT program can boost employee mood – a specific factor associated with burnout.

A survey by the American Nurses Foundation (ANA, 2024) found that 68% of nurses reported feeling stressed within two weeks of taking the survey. Furthermore, 52% felt overwhelmed, 45% overworked, and 45% anxious. In our study, HCW mood improved by almost 50% on average from 2.66 out of 5 before to 3.98 out of 5 after AAT sessions. However, those improvements in mood were only temporary, with HCW's mood returning to similar baseline levels before each new session. Improvements in mood after each session were also reported in a study of employees at a multidisciplinary healthcare clinic at a large VA hospital (Entigen et al., 2020), suggesting that the intervention can be very effective in bolstering mood among employees, albeit for only a short period of time.

Work-life balance is one of the strongest predictors of burnout (Hämmig, 2018). Moreover, when nurses perceive they have support, good working relationships with providers, and adequate staffing, they have 28% lower odds of developing burnout (Schlak et al., 2021). The American Nurses Foundation, Pulse on the Nation's Nurses COVID-19 Survey Series: Workplace Survey, June-July 2022 (ANA, 2024) found that 56% of nurses were experiencing some level of burnout. Rural HCWs are especially vulnerable to burnout and stress (Terry & Je Woo, 2021) due to staffing shortages, limited resources, and perceived educational and training gaps compared to urban nurses (Probst et al., 2019; Rural et al. RECAP, 2021). In addition, rural nurses work more in the community. They are less likely to work in hospitals than urban nurses (Skillman et al., 2007), potentially making it more difficult to address their needs. Thus, rural nurses are expected to know various specialty areas because of the limited staffing.

Some research suggests that AAT can reduce burnout in healthcare workers (Acquadro Maran et al., 2022; Hediger & Hund-Georgiadis, 2017; Machová et al., 2019). For instance, in a study by Machova et al. (2019), salivary cortisol levels in 20 female nurses were significantly reduced after AAT with dogs. Improvements in mood were also observed when Craig et al. (2024) provided dog therapy for HCWs in a high-acuity oncology department. In another instance, HCWs at a rehabilitation clinic found that implementing an AAT program was beneficial and received a positive response from employees (Hediger & Hund-Georgiadis, 2017). Our study showed a 22.57% decrease in client-related burnout after 10 sessions of AAT. However, further research is needed to investigate the effects of AAT on HCW burnout (Hediger & Hund-Georgiadis, 2017).

Of note was that participants in our study with pets had lower baseline and post-intervention levels of burnout. There is evidence that owning a pet is beneficial for overall health, and pet owners may have had fewer preexisting risk factors, such as anxiety and depression, that contribute

to burnout. Dogs have been well-studied for their effects on humans in lowering blood pressure, stress, anxiety, depression, and loneliness (Sykes, 2024). Merkouri et al. (2022) discovered that owning a dog provides emotional support and helps alleviate symptoms of depression and anxiety. They credited the positive impact on mental health to the relationship between humans and their dogs (Merkouri et al., 2022). Similarly, Martin et al. (2021) also reported that people who owned a dog were less depressed during the COVID-19 pandemic than those who did not.

Implementation Barriers and Concerns

While implementing Animal-Assisted Therapy (AAT), it is important to consider factors such as animal welfare, allergies, hygiene, and potential participant injuries (Acquadro Maran et al., 2022). Several valuable lessons have been learned through the implementation of this project. Patient and employee safety is the number one concern with any AAT program designed by any healthcare organization (Brelsford et al., 2020). Organizers must ensure that the participants are suitable for interacting with the animals and that the animals are well-suited for the therapy. In this study, the same three handlers and four dogs were used throughout the study.

Additionally, precautions should be taken to protect non-participants from potential allergic reactions caused by the animals' presence. In this study, the exclusion criteria were allergies to or fears of dogs. Therapy dogs, for example, should be kept in designated areas to prevent non-participants from encountering them. Hygiene is also important, so the therapy area should be vacuumed after each session to remove loose hair and prevent irritation for incoming clients. Ensuring the safety of participants is paramount, and organizers must carefully consider the suitability of the animals used in therapy sessions.

Animal welfare is another primary concern with AAT. However, animals can be unpredictable, and the safety of patients and employees is the top priority. Therefore, therapy dogs

need to be highly trained and certified. However, there are no universal guidelines for AAT or standardized training (Brelsford et al., 2020). In this study, the therapy dogs were certified by Therapy Dog International. Therapy Dogs International is an organization that certifies dogs to visit hospitals, nursing homes, and other facilities as needed. Therapy Dogs International ensures that therapy dogs are vaccinated, wormed, groomed, and cleaned. Handlers are also trained to recognize signs of stress in their animals and to remove the therapy dog from the session when necessary (Brelsford et al., 2020).

Certification completion can be another challenge. Before beginning this study, the principal investigator participated in therapy dog testing. Twelve dog handlers attended therapy dog testing. Therapy dog testing consists of various skills the dogs have to do to pass. Dogs must have basic obedience skills such as sitting, staying, lying down, and healing at the handler's side. During therapy dog testing, dogs are exposed to medical equipment such as wheelchairs, walkers, canes, hospital beds, and various alarms. Dogs are expected to remain calm and obedient to their handlers' cues. They are also taught to resist picking anything up off the floor, as this is a safety measure in case there is a pill on the floor or other item that would be unsafe for the dog to have. They are also taught not to lick people as this is discouraged and improper when working. Dogs are also trained to ignore their prey drive and not chase things that move while working as therapy dogs. Finally, dogs are tested by sitting obediently in a row, and a ball is rolled in front of them; the dogs are to ignore the item or distraction. In this study, there were only three handlers and four dogs because the 12 new dog handlers did not receive their certificate until after the study concluded.

The final challenge, reported elsewhere, was finding the time and space for AAT. Fortunately, the rural clinics where the program was implemented were closed during lunch, making coordinating it slightly easier. For sites that do not close, a "dog on demand" model might

be an option to allow HCWs access to a dog at any time in their workday (Aquadro Maran et al., 2022).

Limitations

The findings of this study are limited due to the small sample size and because it was carried out at a single organization. Furthermore, since all the clinics were in rural Illinois, they may not accurately represent rural clinics in other regions. The timing of the study, conducted from August to December, could have also affected the results as it coincided with various holidays. In addition, the evaluation design, which allowed the intervention to be offered to all employees, limited the exploration of specific confounders. Therefore, it is unclear whether AAT indeed improved mood and client-related burnout or if other factors influenced the results. Nevertheless, research suggests that AAT positively affects employees in different healthcare areas (Hediger & Hund-Georgiadis, 2017). However, the amount and duration of AAT must be assessed to see if an increase in the number or frequency of therapy dog sessions impacts HCW burnout. More studies need to be conducted on pet owners and burnout, including healthcare workers who are pet owners and the correlation to burnout. In addition, the relationship between client-related burnout and patient care should be explored to see if AAT can impact the provision of patient care.

Conclusions

In this study, AAT immediately improved rural HCW mood, a factor associated with burnout. AAT programs are a low-cost intervention that may help tackle the phenomenon of burnout in rural HCWs. Moreover, there is evidence that being a pet owner helps to decrease burnout since pet owners had lower burnout than non-pet owners. Furthermore, there was an association between participation in AAT and client-related burnout, which might translate into

better patient care. Research needs to be conducted on a larger scale to be able to generalize the positive benefits of AAT on mood and the associated risk of burnout in rural HCWs.

Acknowledgments

Conflicts of Interest

The authors declare no conflicts of interest.

References

Acquadro Maran, D., Capitanelli, I., Cortese, C. G., Ilesanmi, O. S., Gianino, M. M., & Chirico, F. (2022). Animal-assisted intervention and health care workers' psychological health: A systematic review of the literature. *Animals*, *12*(3), 383. https://doi.org/10.3390/ani12030383

American Nurses Association (ANA). (2024, April 25). *What is nurse burnout? How to prevent it.* ANA retrieved July 7, 2024, from https://www.nursingworld.org/practice-policy/work-environment/health-safety/disaster-preparedness/coronavirus/what-you-need-to-know/covid-19-survey-series-anf-2022-workplace-survey/

Barton, M. A., Lall, M. D., Johnston, M. M., Lu, D. W., Nelson, L. S., Bilimoria, K. Y., & Reisdorff, E. J. (2022). Reliability and validity support for an abbreviated Copenhagen burnout inventory using exploratory and confirmatory factor analysis. *Journal of the American College of Emergency Physicians Open*, *3*(4), Article e12797. https://doi.org/10.1002/emp2.12797

Bethea, A., Samanta, D., Kali, M., Lucente, F. C., & Richmond, B. K. (2020). The impact of burnout syndrome on practitioners working within rural healthcare systems. *The American Journal of Emergency Medicine*, 38(3), 582-588. https://doi.org/10.1016/j.ajem.2019.07.009

Borritz, M., Rugulies, R., Bjorner, J. B., Villadsen, E., Mikkelsen, O. A., & Kristensen, T. S. (2006). Burnout among employees in human service work: design and baseline findings of the PUMA study. *Scandinavian Journal of Public Health*, *34*(1), 49-58. https://doi.org/10.1080/14034940510032275

Brelsford, V. L., Dimolareva, M., Gee, N. R., & Meints, K. (2020). Best practice standards in animal-assisted interventions: how the LEAD risk assessment tool can help. *Animals*, *10*(6), Article 974. https://doi.org/10.3390/ani10060974

Carter, K. F., & Bogue, R. J. (2022). Application of the model of leadership influence for health professional wellbeing during COVID-19. *Nursing Outlook*, *70*(3), 458-464. https://doi.org/10.1016/j.outlook.2022.02.010

Chen, C., & Meier, S. T. (2021). Burnout and depression in nurses: A systemic review and meta-analysis. *International Journal of Nursing Studies, 124*, Article 104099. https://doi.org/10.1016/j.ijnurstu.2021.104099

Craig, J., Kaplan, C., Rode, D., Stojanowski, M., Smith, C., & Cohen, B. (2024). The impact of facility dog programming on mood and stress among healthcare workers in adult inpatient oncology units. *Practical Implementation of Nursing Science*, *3*(1). https://doi.org/10.29024/pins.62

Dall'Ora, C., Ball, J., Reinius, M., & Griffiths, P. (2020). Burnout in nursing: A theoretical review. *Human Resources for Health*, 18, Article 41. https://doi.org/10.1186/s12960-020-00469-9

De Hert, S. (2020). Burnout in healthcare workers: prevalence, impact and preventative strategies. *Local and Regional Anesthesia*, *13*, 171-183. https://doi.org/10.2147/LRA.S240564

Etingen, B., Martinez, R. N., Smith, B. M., Hogan, T. P., Miller, L., Saban, K. L., ... & Weaver, F. M. (2020). Developing an animal-assisted support program for healthcare employees. *BMC Health Services Research*, *20*(1), 1-9. https://doi.org/10.1186/s12913-020-05586-8

Hämmig, O. (2018). Explaining burnout and the intention to leave the profession among health professionals–a cross-sectional study in a hospital setting in Switzerland. *BMC Health Services Research*, *18*, 1-11. https://doi.org/10.1186/s12913-018-3556-1

Hediger, K., & Hund-Georgiadis, M. (2017). Animal-assisted therapy in the view of staff members before and after implementation in a rehabilitation clinic. *Human - Animal Interaction Bulletin*, *5*(2), 61-73. https://doi.org/10.1079/hai.2017.0009

Jose, S., Dhandapani, M., & Cyriac, M. C. (2020). Burnout and resilience among frontline nurses during COVID-19 pandemic: A cross-sectional study in the emergency department of a tertiary care center, North India. *Indian Journal of Critical Care Medicine: Peer-reviewed, Official Publication of Indian Society of Critical Care Medicine*, *24*(11), 1081-1088. https://doi.org/10.5005/jp-journals-10071-23667

Khammissa, R. A., Nemutandani, S., Feller, G., Lemmer, J., & Feller, L. (2022). Burnout phenomenon: Neurophysiological factors, clinical features, and aspects of management. *Journal of International Medical Research*, *50*(9). https://doi.org/10.1177/03000605221106428

Klein, C. J., Weinzimmer, L. G., Cooling, M., Lizer, S., Pierce, L., & Dalstrom, M. (2020). Exploring burnout and job stressors among advanced practice providers. *Nursing Outlook*, *68*(2), 145-154. https://doi.org/10.1016/j.outlook.2019.09.005

Koukourikos, K., Georgopoulou, A., Kourkouta, L., & Tsaloglidou, A. (2019). Benefits of animal-assisted therapy in mental health. *International Journal of Caring Sciences, 12*(3), 1898-1905 https://www.internationaljournalofcaringsciences.org/docs/64_koukorikos_review_12_3. Pdf

Koutsimani, P., Montgomery, A., & Georganta, K. (2019). The relationship between burnout, depression, and anxiety: A systematic review and meta-analysis. *Frontiers in Psychology*, *10*, 284. https://doi.org/10.3389/fpsyg.2019.00284

Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress, 19*(3), 192-207. https://doi.org/10.1080/02678370500297720

Machová, K., Součková, M., Procházková, R., Vaníčková, Z., & Mezian, K. (2019). Canine-assisted therapy improves well-being in nurses. *International Journal of Environmental Research and Public Health*, *16*(19), Article 3670. https://www.mdpi.com/1660-4601/16/19/3670

Martin, F., Bachert, K. E., Snow, L., Tu, H. W., Belahbib, J., & Lyn, S. A. (2021). Depression, anxiety, and happiness in dog owners and potential dog owners during the COVID-19 pandemic in the United States. *PLoS One*, *16*(12), Article e0260676. https://doi.org/10.1371/journal.pone.0260676

Melnyk, B. M. (2020). Burnout, depression and suicide in nurses/clinicians and learners: An urgent call for action to enhance professional well-being and healthcare safety. *Worldviews on evidence-based nursing*, *17*(1), 2-5. http://dx.doi.org/10.1111/wvn.12416

Merkouri, A., Graham, T. M., O'Haire, M. E., Purewal, R., & Westgarth, C. (2022). Dogs and the good life: a cross-sectional study of the association between the dog–owner relationship and owner mental wellbeing. *Frontiers in Psychology*, *13*, Article 903647. https://doi.org/10.3389/fpsyg.2022.903647

Murthy, V. H. (2022). *Addressing health worker burnout: The U.S. surgeon general's advisory on building a thriving health workforce.* Addressing Health Worker Burnout: The U.S. Surgeon General's Advisory on Building a Thriving Health Workforce. Retrieved July 7, 2024, from https://www.hhs.gov/sites/default/files/health-worker-wellbeing-advisory.pdf

Ogunsuji, O., Ogundipe, H., Adebayo, O., Oladehin, T., Oiwoh, S., Obafemi, O., ... & Atilola, O. (2022). Internal reliability and validity of Copenhagen Burnout Inventory and Oldenburg Burnout Inventory compared with Maslach Burnout Inventory among Nigerian resident doctors: A pilot study. *Dubai Medical Journal*, 1-7. https://doi.org/10.1159/000521376

Probst, J., Hunt McKinney, S., Zahnd, W., & Haynes, E. (2019, August). *Perceived facilitators and barriers to rural nursing practice. Rural Health Research Gateway*. Retrieved July 4, 2024, from Publication Details: Perceived Facilitators and Barriers to Rural Nursing Practice - Rural Health Research Gateway. https://www.ruralhealthresearch.org/publications/1273

Registered Nursing.org. (2024, April 25). *Guide to rural nursing*. Registerednursing.org, Retrieved July 7, 2024 from https://www.registerednursing.org/rural-nursing-guide

Rosencrans, J., & Ostmo, P. (2021, December). Rural nursing workforce. Rural Health Research Gateway. Retrieved August 5, 2024, from https://www.ruralhealthresearch.org/recaps/13

Sakurama, M., Ito, M., Nakanowataru, Y., & Kooriyama, T. (2023). Selection of appropriate dogs to be therapy dogs using the C-BARQ. *Animals*, *13*(5), Article 834. https://doi.org/10.3390/ani13050834

Skillman, S. M., Palazzo, L., Keepnews, D., & Hart, L. G. (2007). Characteristics of registered nurses in rural versus urban areas: implications for strategies to alleviate nursing shortages in the United States. *The Journal of Rural Health*, *22*(2), 151-157. https://doi.org/10.1111/j.1748-0361.2006.00024.x

Sykes, J. (2024, April 11). *Health benefits of pets: How your furry friend improves your mental and physical health*. UC Davis Health retrieved July 25, 2024, from https://health.ucdavis.edu/blog/cultivating-health/health-benefits-of-pets-how-your-furry-friend-improves-your-mental-and-physical-health/2024/04

Sullivan, D., Sullivan, V., Weatherspoon, D., & Frazer, C. (2022). Comparison of Nurse burnout before and during the COVID-19 Pandemic. *Nursing Clinics*, 57(1), 79-99. https://doi.org/10.1016/j.cnur.2021.11.006

Terry, D. L., & Woo, M. J. (2021). Burnout, job satisfaction, and work-family conflict among rural medical providers. *Psychology, Health & Medicine*, 26(2), 196-203. https://doi.org/10.1080/13548506.2020.1750663

Therapy Dogs International (TDI) Testing Requirements. (n.d.). *Therapy Dogs International Testing Requirements* [Brochure]. https://www.tdi-dog.org/images/testingbrochure.pdf

Wichetwichai, Y. (2018, November 22). *Burnout syndrome: A condition that seriously affects a person's ability to work*. Samitivej PCL Retrieved August 25, 2024, from https://www.samitivejhospitals.com/article/detail/burnout-syndrome