



Anthrozoös

A multidisciplinary journal of the interactions between people and other animals

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/rfan20>

“A Love–Hate Relationship with What I Do”: Protecting the Mental Health of Animal Care Workers

Nicola K. Paul, Suzanne M. Cosh & Amy D. Lykins

To cite this article: Nicola K. Paul, Suzanne M. Cosh & Amy D. Lykins (2023) “A Love–Hate Relationship with What I Do”: Protecting the Mental Health of Animal Care Workers, *Anthrozoös*, 36:3, 489-508, DOI: [10.1080/08927936.2023.2166712](https://doi.org/10.1080/08927936.2023.2166712)

To link to this article: <https://doi.org/10.1080/08927936.2023.2166712>



© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 27 Jan 2023.



Submit your article to this journal [↗](#)



Article views: 2495



View related articles [↗](#)



View Crossmark data [↗](#)

“A Love–Hate Relationship with What I Do”: Protecting the Mental Health of Animal Care Workers

Nicola K. Paul, Suzanne M. Cosh, and Amy D. Lykins

School of Psychology, Faculty of Medicine, and Health, University of New England, Armidale, Australia

ABSTRACT

Mental ill-health associated with animal care work, coupled with a current shortage of animal care workers (ACWs), highlights the need to support this population’s wellbeing. Guided by the Job Demands-Resources model of burnout and the principles of positive occupational health psychology, we aimed to explore mental ill-health in ACWs and identify potential risks and protective factors for their wellbeing. ACWs ($n = 217$) completed an anonymous online questionnaire with measures of post-traumatic stress disorder (PTSD) symptoms, psychological distress, burnout, grief, social support, organizational support, and empathy for animals. We also asked an open question about what participants liked about their work. Our sample had a higher incidence of mental ill-health than the Australian general population. Multiple regression analyses suggested grief may be a job demand for ACWs, significantly accounting for 2.8–4.3% of the variance in burnout. Likewise, organizational support may be a job resource for ACWs, significantly accounting for 17.3–25.5% of the variance in burnout. Finally, qualitative content analysis indicated that ACWs enjoyed professional accomplishments, interpersonal interactions, and contact with animals as part of their work. We discuss our results and how they may be used to inform the implementation of workplace changes that support ACWs’ wellbeing.

KEYWORDS

Grief; human–animal interaction; veterinary professionals; workplace distress; workplace wellbeing

Animal care workers (ACWs) look after animals as employees or volunteers, with roles including veterinarians, veterinary nurses, animal attendants, wildlife carers, foster carers, zookeepers, and administrative workers. More frequent human–wildlife conflict and natural disasters (Englefield et al., 2019; Guy & Banks, 2012; WIRES, n.d.), and a growing number of companion animals (Australian Bureau of Statistics, 1995; Animal Medicines Australia, 2019), mean demand for these skilled workers is increasing. Media reports indicate the industry is struggling to meet this demand (Clarke, 2022; Huezenroeder & Stephens, 2021; Roy, 2021). This shortage of workers may be related to the stressors inherent in animal care work, which include balancing medical and

CONTACT Amy D. Lykins  alykins@une.edu.au  School of Psychology, Faculty of Medicine and Health, University of New England, Psychology Building, Armidale, NSW 2351, Australia

© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

administrative duties (Fritschi et al., 2009), sleep deprivation (Englefield et al., 2019), low pay (Australian Veterinary Association, 2015; Heath, 2007), risk of physical illness and injury (Bennett & Rohlf, 2005), and non-compliant customers (Bennett & Rohlf, 2005; Deacon & Brough, 2021). These stressors have the potential to harm the mental health and wellbeing of ACWs.

Mental Ill-Health Associated with Animal Care Work

Prior studies suggest many ACWs experience post-traumatic stress disorder (PTSD) symptoms (e.g., intrusive memories and dreams, dissociation, negative mood, and reactivity) associated with events they experience at work (Hall et al., 2004). Such events include culling animals during disease outbreaks (Makita et al., 2015), euthanizing animals (Bennett & Rohlf, 2005), and witnessing animals' traumatic deaths (Deacon & Brough, 2021). Andrukonis and Protopopova (2020) surveyed American animal shelter workers and found that one-fifth may have been eligible for a PTSD diagnosis, meaning the likelihood a shelter worker had PTSD was about 10 times higher than the yearly prevalence in the United States. These findings suggest that even some routine experiences in animal care workplaces may be associated with the development of PTSD symptoms.

Like PTSD symptoms, psychological distress has been associated with animal care work. Psychological distress is emotional suffering, including symptoms of depression and anxiety, such as inability to cope, irritability, and decreased self-esteem (Arvidsdotter et al., 2016; Ridner, 2004). Marton et al. (2020) surveyed veterinary clinic and animal shelter workers, 81% of whom reported depression triggered by workplace events, although it was not clear how these workers conceptualized their depression. Similarly, Hatch et al. (2011) found significantly higher proportions of moderate to extremely severe depression and stress in Australian veterinarians than in the general population.

Grief has also been identified as an adverse outcome associated with animal care work. Grief is a response to a loss or losses that encompasses feelings (e.g., sadness), cognitions (e.g., disbelief), and behaviors (e.g., social withdrawal) (Worden, 2018). ACWs routinely lose the animals they care for to death, transfer, release, and rehoming (Deacon & Brough, 2021; Englefield et al., 2019; Marton et al., 2020), and prior studies show many ACWs grieve these losses (Chang & Hart, 2002; Deacon & Brough, 2021; Englefield et al., 2019; Marton et al., 2020). These findings support the contention that grief may be a chronic stressor for ACWs.

As a chronic stressor, it is possible that grief contributes to burnout – defined as exhaustion, cynicism, and detachment associated with workplace stress (World Health Organization, 2019) – in ACWs. These symptoms have been found in veterinarians (Hatch et al., 2011), veterinary nurses (Deacon & Brough, 2021), and wildlife carers (Englefield et al., 2019; Yeung et al., 2017). For example, Yeung et al. (2017) reported 70% of a sample of New Zealand wildlife carers were in medium- or high-risk categories for burnout, and Englefield et al. (2019) reported many Australian wildlife carers experienced burnout symptoms. These wildlife carers also identified workplace characteristics known to predict burnout, such as lack of support (Maslach et al., 2001). To our knowledge, the possibility that grief and burnout are associated in ACWs has not been explored, but this link has been established in human healthcare workers. For example, Adwan (2014) found

significant and positive correlations between scores on self-report measures of grief and burnout in pediatric nurses, who experience routine losses of vulnerable patients in ways similar to many ACWs. This association can be explained using the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007).

The JD-R Model and Burnout in ACWs

The JD-R model suggests burnout arises through interactions between job demands and job resources (Bakker & Demerouti, 2007). *Job demands* are workplace characteristics that cause fatigue through sustained physical or psychological effort (Bakker & Demerouti, 2007). Accordingly, prolonged grief may be a job demand because it requires sustained psychological effort. The JD-R model suggests burnout occurs when job demands are not mitigated by *job resources*: positive occupational characteristics that motivate workers and facilitate the completion of tasks (Bakker & Demerouti, 2007; Hunt et al., 2017). Prior studies suggest social support (Black et al., 2011; Monaghan et al., 2020), organizational support (Dugani et al., 2018; Maslach et al., 2001; West et al., 2018), and empathy for animals (Wagaman et al., 2015) could be job resources for ACWs.

Social and organizational support may reduce job demands practically (e.g., colleagues assisting with task completion) and psychologically (e.g., encouragement from family and friends) (Bakker & Demerouti, 2007; Maslach et al., 2001). *Social support* is assistance from other people (Bakker & Demerouti, 2007; Maslach et al., 2001), while *organizational support* arises from workplace characteristics that signal to employees they are valued (Rhoades & Eisenberger, 2002). Black et al. (2011) found greater social support was significantly correlated with reduced burnout symptoms in veterinary nurses, and Monaghan et al. (2020) reported social support could assist ACWs in coping with job demands, including euthanasia. Prior studies have found many ACWs feel their organizations undervalue them and disregard their wellbeing (Englefield et al., 2019; Marton et al., 2020), but the link between low organizational support and burnout has not been explored in this population (to our knowledge). This link is strongly supported in populations of human healthcare workers, including physicians and nurses (Dugani et al., 2018; Maslach et al., 2001; West et al., 2018), and therefore warrants investigation in ACWs as well.

Empathy for animals may also affect burnout in ACWs, although previous studies have yielded mixed results on relationships between empathy and burnout. *Empathy* involves emotional components, such as perceiving what another is feeling and generating an emotional response, and cognitive components, such as perspective-taking and emotion regulation (Cuff et al., 2016; Wagaman et al., 2015). It is possible empathic responses to distressed patients are a psychological demand for care workers, and this theory is supported by positive correlations between empathy and burnout in human healthcare nurses (Tei et al., 2014), and empathy for animals and exhaustion in veterinarians (Varela & Correia, 2022). However, a greater number of studies have reported negative associations between empathy and burnout in human healthcare workers (Hunt et al., 2017; Wilkinson et al., 2017). It may be that exhaustion associated with burnout reduces the energy available to generate empathic responses (Ferri et al., 2015). Alternatively, it is possible engaging both the emotional and cognitive components of empathy enables care workers to understand the distress of their clients while avoiding becoming overwhelmed (Wagaman et al.,

2015). If accurate, the latter theory suggests empathy may represent a job resource (Wagaman et al., 2015), and this possibility warrants investigation.

Positive Occupational Health Psychology and ACWs

As discussed, there are many negative characteristics of animal care work that have been associated with mental ill-health, and efforts to improve the wellbeing of ACWs will benefit from the exploration of these risk factors. However, an exclusively negative focus risks ignoring the positive features of animal care work that could be leveraged to enhance the wellbeing of ACWs. Indeed, as discussed by Clise et al. (2021), ACWs may simultaneously experience the negative outcomes discussed above and positive outcomes associated with aspects of their work that they like. Accordingly, Bakker and Derks (2010) advocate for a balanced approach that includes *positive occupational health psychology*: the exploration of positive occupational characteristics that have the potential to enable workers to flourish. Such an approach related to animal care work is in its infancy, with limited investigation among veterinarians (Clise et al., 2021) and none to our knowledge that include the breadth of roles in animal care workplaces.

The Current Study

As discussed, multiple studies have found high rates of PTSD symptoms, psychological distress, burnout, and grief in ACWs, pointing to the urgent need to develop strategies to support their mental health. However, there has been little research into interventions to improve their wellbeing (Rohlf, 2018). As such, we aimed to explore mental ill-health in ACWs and uncover potential risk and protective factors that could be used to inform better support for them. In service of this aim, we measured PTSD symptoms, psychological distress, burnout, and grief in a sample of ACWs and conducted exploratory analyses of the interactions between these adverse outcomes and potential job resources. We then analyzed the predictors of burnout as a key work-related outcome for ACWs through the lens of the JD-R model (Bakker & Demerouti, 2007). We hypothesized grief severity would positively predict burnout severity (Hypothesis 1) and that social support, organizational support, and empathy for animals would negatively predict burnout severity (Hypothesis 2). Finally, drawing on suggestions by Bakker and Derks (2010), we used content analysis to explore the positive characteristics of animal care work, aiming to uncover additional potential protective factors.

Methods

The Human Research Ethics Committee of the University of New England approved this study (HE 20-062).

Participants

This study analyzed data from a larger project that explored the mental health of ACWs and the impacts of the 2019/2020 Australian Black Summer bushfires and the COVID-19

pandemic on them. A convenience sample of ACWs was recruited between April and July 2020. Participants were required to be at least 18 years old and working or volunteering for an animal care organization at the time. Of the 217 participants who met these criteria, 198 (91.24%) were female and 19 (8.76%) were male. Participants had been an ACW for 0.3–50 years ($M = 9.51$, $SD = 8.1$). Their roles included veterinary nurses ($n = 86$), managers ($n = 25$), other/unspecified ($n = 23$), zookeepers ($n = 22$), animal attendants ($n = 16$), foster carers ($n = 14$), wildlife carers ($n = 12$), administrative workers ($n = 11$), and veterinarians ($n = 8$).

Procedure

Data were collected using an anonymous online survey hosted by Qualtrics™. Participants followed a link to the survey and viewed the information sheet. Participation was voluntary, and participants consented by clicking on a “proceed to study” button. Participants then answered demographic questions before all measures described below were presented in random order. An open question asking what participants liked about their work was presented last. As discussed by Doyle et al. (2009), we chose a mixed-methods approach, with the aim of collecting corroborating quantitative and qualitative data to strengthen any inferences made.

Measures

PTSD Symptoms

We measured PTSD symptoms using the PTSD Checklist for *DSM-5* (PCL-5; Weathers et al., 2013). First, participants responded to seven items querying their exposure to traumatic events. If they met this criterion, they indicated how much they had been bothered in the past month by 20 PTSD symptoms, such as “Having difficulty concentrating,” using a 5-point scale, ranging from 0 (Not at all) to 4 (Extremely). A score ≥ 31 was used to infer probable PTSD, as per Weathers et al. (2013).

Psychological Distress

The Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995) quantify psychological distress via three 7-item subscales: Depression (i.e., loss of self-worth, low mood, and pessimism), Anxiety (i.e., apprehension, panic, and worries about performance or loss of control), and Stress (i.e., tension, inability to relax, irritability, hyperarousal, and impatience). Participants rated how much statements (e.g., “I found myself getting agitated”) applied to them over the past week using a 4-point scale, ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much or most of the time). Based on cut-offs given by Lovibond and Lovibond (1995), participants were categorized according to severity as normal, mild, moderate, severe, and extremely severe.

Burnout

The 6-item Personal Burnout and 7-item Work Burnout subscales of the Copenhagen Burnout Inventory (CBI; Kristensen et al., 2005) measure physical and psychological exhaustion in general and attributed to work. Participants answered questions on

Personal Burnout (e.g., “How often do you feel tired?”) and Work Burnout (e.g., “Does your role as an Animal Care Worker frustrate you?”) using a 5-point scale, ranging from 0 (Never/Almost never/To a very low degree) to 100 (Always/To a very high degree). As suggested by Kristensen et al. (2005), a score ≥ 50 was used to infer probable burnout.

Grief

The Grief Diagnostic Instrument (GDI; Clark et al., 2006) defines loss as a perceived negative change due to the absence of something valued and measures the physical, emotional, behavioral, cognitive, and spiritual effects of combined losses. First, participants selected the types of loss(es) they had experienced as an ACW (e.g., “compassionate euthanasia”) from a list of 11 loss types that we adapted for our study based on findings by Deacon and Brough (2021) and Marton et al. (2020). In Section 2, participants rated how often they had experienced 16 grief symptoms (e.g., “Overall how much have thoughts and feelings about your losses distressed you?”) over the previous two weeks using a 4-point scale, ranging from 0 (Never) to 3 (Continuously/A lot of the time). Participants were categorized according to grief severity as none, mild, moderate, and severe, according to suggestions by Clark et al. (2006).

Social Support

The 5-item Inventory of Social Support (ISS; Hogan & Schmidt, 2002) measures the availability of a person who will listen without judgment to the participant’s expressions of grief. Participants considered the losses they had experienced as an ACW while rating how well statements (e.g., “People take the time to listen to how I feel”) described them in the previous two weeks using a 5-point scale, ranging from 1 (Does not describe me very well) to 5 (Describes me very well).

Organizational Support

The 8-item Survey of Perceived Organizational Support (SPOS; Eisenberger et al., 1986) measures a worker’s belief that their workplace values them. Participants rated their agreement with statements about their animal care organization (e.g., “The organization values my contribution to its wellbeing”) using a 7-point scale, ranging from 0 (Strongly disagree) to 6 (Strongly agree).

Empathy for Animals

The Animal Empathy Scale (AES; Paul, 2000) gauges the strength of emotional responses to animals experiencing negative events. Participants rated their agreement with 22 statements (e.g., “Seeing animals in pain upsets me”) using a 9-point scale, ranging from 1 (Disagree very strongly) to 9 (Agree very strongly).

Positive Aspects of Animal Care Work

Participants were instructed to write as much or as little as they liked in response to the following question: “Please describe events or experiences that have brought you joy in your role as an animal care worker. What do you like about being an animal care worker?”

Analyses

Quantitative analyses were conducted using SPSS (Version 26). Zero-order correlations were calculated to test relationships between depression, anxiety, stress, personal burnout, work burnout, grief, PTSD symptoms, organizational support, social support, and empathy. We used Spearman correlations owing to the non-normal distributions of PTSD symptoms, depression, and anxiety. We then used two hierarchical multiple regression analyses to test our hypotheses, with personal and work burnout as the dependent variables. Grief was entered as a predictor in Step 1 to test Hypothesis 1. Social support, organizational support, and empathy for animals were entered in Step 2 to test Hypothesis 2.

Qualitative analyses were conducted using a conventional/inductive approach to content analysis. As per suggestions by Hsieh and Shannon (2005), we chose this approach considering the limited existing data on the positive aspects of animal care work. The first author, a former veterinary nurse, repeatedly read all data to achieve immersion. The first author's veterinary nursing background helped combat a weakness of content analysis: the risk of failing to understand the context of the data (Hsieh & Shannon, 2005). The first author then coded data into key concepts using NVivo (Release 1.3), and initial analyses were developed, recorded, and refined. All items received equal attention for coding. Coded items were then clustered into subcategories, which were further combined into larger categories. All extracts relevant to each category were collated by the first author and checked by the second and third authors, experienced research psychologists, for internal consistency and conceptual distinctiveness. The second and third authors' backgrounds helped ameliorate potential biases introduced by the first author's experiences within the animal care industry. Quotations presented in this paper are excerpts that best represent categories and subcategories.

Results

Overview of ACW Mental Health

Descriptive statistics and Cronbach's alphas for each measure are presented in Table 1. Many participants (64.52%, $n = 140$) indicated they had experienced or witnessed a traumatic event, and based on their responses to the PCL-5, 30.88% ($n = 67$) of the sample may have had diagnosable PTSD. Furthermore, approximately half the sample were

Table 1. Descriptive statistics for key variables.

Variable	<i>M</i> (<i>SD</i>)	Range	Cronbach's α
Depression	6.31 (5.56)	0–21	0.93
Anxiety	4.75 (4.51)	0–18	0.86
Stress	8.08 (5.22)	0–21	0.90
Personal burnout	55.98 (19.01)	4.17–95.83	0.87
Work burnout	48.20 (20.61)	7.14–92.86	0.88
Grief	13.16 (8.43)	0–47	0.93
PTSD symptoms	17.97 (20.65)	0–72	0.95
Organizational support	3.62 (1.64)	0–6	0.94
Social support	16.49 (4.70)	5–25	0.86
Empathy	64.82 (18.18)	29–139	0.76

Note: PTSD = post-traumatic stress disorder.

experiencing mild to extremely severe symptoms of depression, anxiety, and stress (Table 2). Likewise, 58.53% ($n = 127$) were probably experiencing personal burnout, and 44.7% ($n = 97$) were probably experiencing work burnout. Finally, participants indicated they had experienced an average of 6.14 ($SD = 2.96$) types of loss as an ACW. GDI scores showed that only 2.3% ($n = 5$) of our participants were not experiencing grief related to these losses, 65.44% ($n = 142$) were experiencing mild grief, 13.82% ($n = 30$) were experiencing moderate grief, and 13.82% ($n = 30$) were experiencing severe grief (10 participants did not complete the GDI).

Table 3 presents zero-order correlations amongst the key variables. Of note, there were significant, moderate, positive correlations between grief and burnout. Grief was also significantly, moderately, and positively correlated with PTSD symptoms, depression, anxiety, and stress. Furthermore, there were significant, weak-to-moderate, negative correlations between organizational support and all adverse psychological outcomes. Finally, there were significant and negative (though weak) correlations between empathy for animals and personal burnout and grief.

Predictors of Burnout in ACWs

Personal Burnout

Grief accounted for a significant 13.6% of the variability in personal burnout in Step 1 ($R^2 = 0.14$, adjusted $R^2 = 0.13$, $F_{(1, 193)} = 30.31$, $p < 0.001$). Social support, organizational support, and empathy for animals accounted for a significant additional 23.1% of the variance in personal burnout in Step 2 ($\Delta R^2 = 0.23$, $\Delta F_{(3, 190)} = 23.04$, $p < 0.001$). The predictors explained a significant 36.6% of the variance in personal burnout ($R^2 = 0.37$, adjusted $R^2 = 0.35$, $F_{(4, 190)} = 27.45$, $p < 0.001$). This effect is large by Cohen's (2013) conventions ($f^2 = 0.58$).

Grief, organizational support, and empathy explained a significant proportion of unique variance in personal burnout (Table 4). Grief accounted for 4.33% of the variance, organizational support for 17.31%, and empathy for 1.8%. The results support Hypothesis 1 and partially support Hypothesis 2.

Work Burnout

Grief accounted for a significant 10.4% of the variability in work burnout in Step 1 ($R^2 = 0.10$, adjusted $R^2 = 0.10$, $F_{(1, 193)} = 22.47$, $p < 0.001$). Social support, organizational support, and empathy for animals accounted for a significant additional 28.5% of the variance in

Table 2. Summary of DASS-21 scores.

Subscale	Normal n (%)	Mild n (%)	Moderate n (%)	Severe n (%)	Extremely severe n (%)
Depression ($n = 212$)	105 (49.52)	27 (12.74)	37 (17.45)	15 (7.08)	28 (13.21)
Anxiety ($n = 211$)	105 (48.34)	31 (14.69)	27 (12.80)	17 (8.06)	31 (14.69)
Stress ($n = 213$)	114 (53.52)	26 (12.21)	26 (12.21)	25 (11.74)	22 (10.33)

Note: DASS-21 = Depression Anxiety Stress Scales (21-item version; Lovibond & Lovibond, 1995).

Table 3. Spearman correlation coefficients for key mental health variables.

Variable	1	2	3	4	5	6	7	8	9	10
1. Depression	–									
2. Anxiety	0.70***	–								
3. Stress	0.80***	0.77***	–							
4. Personal burnout	0.53***	0.51***	0.60***	–						
5. Work burnout	0.44***	0.44***	0.50***	0.79***	–					
6. Grief	0.48***	0.53***	0.50***	0.36***	0.32***	–				
7. PTSD symptoms	0.43***	0.36***	0.40***	0.31***	0.18*	0.34***	–			
8. Organizational support	–0.38***	–0.35***	–0.41***	–0.57***	–0.59***	–0.24***	–0.26***	–		
9. Social support	–0.19**	–0.10	–0.22**	–0.21**	–0.19*	–0.04	–0.20**	0.35***	–	
10. Empathy	–0.04	–0.00	–0.13	–0.16*	–0.00	–0.17*	–0.09	–0.03	0.02	–

Note: $n = 186$. PTSD = post-traumatic stress disorder.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed).

Table 4. Results of a hierarchical multiple regression analysis predicting personal burnout (PB) and work burnout (WB) in animal care workers.

Variable	B [95% CI]		R^2 (adjusted R^2)		r		sr^2	
	PB	WB	PB	WB	PB	WB	PB	WB
<i>Step 1</i>								
Grief	0.84 [0.54, 1.14]***	0.82 [0.48, 1.17]***	0.14 (0.13)***	0.10 (0.10)***	0.37***	0.32***	0.14	0.10
<i>Step 2</i>								
Grief	0.50 [0.23, 0.77]***	0.45 [0.15, 0.75]**			0.37***	0.32**	0.04	0.03
Organizational support	–5.24 [–6.67, –3.80]***	–7.14 [–8.72, –5.56]***			–0.54***	–0.60***	0.17	0.26
Social support	–0.18 [–0.67, 0.31]	–0.10 [–0.44, 0.64]			–0.23	–0.19	0.00	0.04
Empathy	–0.14 [–0.26, –0.02]*	0.01 [–0.13, 0.14]			–0.19*	–0.04	0.01	0.00

Note: $n = 195$. B = unstandardized regression coefficient; R^2 = coefficient of determination; CI = confidence interval; r = zero-order correlation; sr^2 = squared semi-partial correlation.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (one-tailed).

work burnout in Step 2 ($\Delta R^2 = 0.29$, $\Delta F_{(3, 190)} = 29.51$, $p < 0.001$). The predictors explained a significant 38.9% variance in work burnout ($R^2 = 0.39$, adjusted $R^2 = 0.38$, $F_{(4, 190)} = 30.23$, $p < 0.001$). This effect is large by Cohen's (2013) conventions ($f^2 = 0.64$).

Grief and organizational support explained a significant proportion of unique variance in work burnout (Table 4). Grief accounted for 2.8% of the variance and organizational support for 25.5% of work burnout. Again, the results support Hypothesis 1 and partially support Hypothesis 2.

Positive Characteristics of Animal Care Work

Responses to the question asking what participants liked about their work fell into four categories (Table 5).

Professional Accomplishments

Professional accomplishments were cited by the greatest number of ACWs. Many ACWs referred to successful care outcomes as something they enjoyed; for example, returning lost pets, finding new owners, helping animals recover from illness or injury, releasing wildlife, and training an animal. Notably, many participants identified easing suffering

Table 5. Results of a content analysis of animal care workers' (ACWs) descriptions of positive characteristics of their work.

Category and description	Subcategory	Example
Professional Accomplishments ($n = 188$). ACWs described a variety of professional accomplishments as something they liked about their work.	Animal care successes ($n = 148$)	I can ease the suffering if required. I can see them "smile" when they are better. Death is not always bad (accidental) it can also be a blessing and beautiful.
	Specific achievements and skills mastery ($n = 23$)	The challenge of hand-rearing animals, or even to make complex health assessments to determine treatments and the satisfaction of being agreed with by superiors.
	Contributing to the bigger picture of animal welfare and conservation ($n = 12$)	Most of all, I like that my job gives me a sense of purpose – it makes me feel like I'm making a difference in the world.
Interpersonal Interactions ($n = 61$). ACWs described their interactions with other people as a positive aspect of their work.	Relationships with clients ($n = 34$)	Clients that are excited to see me or tell me they feel more comfortable leaving their pet at the clinic because I'm there.
	Relationships with peers ($n = 26$)	I enjoy the direct team I work with – we get along with similar humor, work ethic and personal/animal care-related ethics.
Contact With Animals ($n = 49$). Participants described the presence of animals as a positive aspect of animal care work.	None	I care for bats reptiles and birds and was a foster for shelter dogs and cats. I enjoy the unconditional affection and relationship.
The Downsides of Animal Care Work ($n = 7$). Participants described some positives before shifting their focus to negatives.	None	I love the animals and nature, and the ability to give back to the wild. However, everything to do with the structure of the [animal care] industry, from an organizational perspective, is repugnant.

as positive, even when the animal did not survive. In addition, participants described specific achievements (e.g., performing work to a high standard and mastering new skills) as positive. Many ACWs enjoyed the challenging nature of their work, liked progressing in their careers, and were proud of their ability to perform technical tasks. Finally, participants enjoyed contributing to the bigger picture by using their unique positions to improve animal welfare and conservation.

Interpersonal Interactions

Many ACWs described their relationships with clients (e.g., pet owners or adopters) as positive. These ACWs liked helping and supporting their clients and receiving appreciation and gratitude. Several ACWs also described forming bonds with specific clients. The ability to comfort clients during stressful times was also identified as a positive aspect of animal care work. In addition, many ACWs valued their relationships with their peers, describing team cohesion and knowledge-sharing as positive, and citing fun and humor as sources of joy at work.

Contact with Animals

Contact with animals was another commonly cited rewarding aspect of animal care work. Many ACWs enjoyed being surrounded by animals and described joy derived from time spent positively interacting with the diverse species in their care, including dogs, cats, bats, reptiles, and birds. Further, several ACWs experienced joy in response to animals displaying excited and friendly body language when meeting the ACW in their workplace. Likewise, many participants liked “bonding,” “attachment,” and “relationships” with the animals in their care and described enjoying their discovery of animals’ individual personalities.

The Downsides of Animal Care Work

Most participants identified multiple positive aspects of their work. However, several participants described some positives before shifting their focus to the negative aspects of their work and industry. These negatives included organizational problems, unappreciative clients, and pressure from the nature and amount of work.

Discussion

We aimed to explore mental ill-health in ACWs, and the results indicate that many of our participants were experiencing mental ill-health. We also aimed to uncover potential risk and protective factors for ACWs’ wellbeing. Drawing on the JD-R model (Bakker & Demerouti, 2007), we hypothesized grief severity would positively predict burnout severity. This hypothesis was supported, with grief severity significantly and positively predicting the severity of both personal and work burnout. We further hypothesized that social support, organizational support, and empathy for animals would negatively predict burnout; this hypothesis was partially supported. Organizational support and empathy for animals significantly and negatively predicted personal burnout, while organizational support, but not empathy, significantly and negatively predicted work burnout.

Finally, guided by Bakker and Derks (2010) and aiming to uncover additional factors that could be used to boost ACWs' wellbeing, participants were asked what they liked about their work. ACWs identified professional accomplishments, interpersonal interactions, and contact with animals as positive aspects of their work. Several ACWs identified limited positives before turning their focus to the negatives, further pointing to the need for workplace changes. Our results suggest that understanding the influences of grief, organizational support, professional accomplishments, interpersonal relationships, and contact with animals may help inform these changes so that they meet ACWs' unique needs.

Overview of ACW Mental Health

The proportion of the study's sample who were experiencing severe to extremely severe symptoms of psychological distress was higher than the general population of Australia (15%; Australian Bureau of Statistics, 2022), and many participants were likely experiencing burnout and mild to severe grief. Likewise, nearly one-third of participants may have been eligible for a PTSD diagnosis, suggesting that the likelihood an ACW in this sample had PTSD was approximately five times higher than Australia's yearly prevalence (5.7%; Australian Bureau of Statistics, 2022). These findings are consistent with previous studies on mental ill-health in ACWs (Andrukonis & Protopopova, 2020; Deacon & Brough, 2021; Englefield et al., 2019; Hatch et al., 2011; Marton et al., 2020). These results and those of prior studies confirm the need for ACWs' mental health and wellbeing to be better supported.

Supporting ACW Mental Health and Wellbeing

Our results suggest that grief may be a significant job demand for ACWs, consistent with prior research on other care workers. For example, Adwan (2014) found small to medium correlations between grief and burnout in pediatric nurses. We also found grief was significantly and positively correlated with PTSD symptoms and psychological distress, consistent with findings on human healthcare workers (Meller et al., 2019). Given our qualitative data indicate that many ACWs form meaningful relationships with the animals in their care, it is unsurprising that these workers grieve the recurring losses of these animals. As such, understanding ACWs' grief may be useful in tailoring mental health support to their unique needs, in line with recommendations by Fournier and Mustful (2019). To our knowledge, the potential benefit of grief supports for ACWs has not been examined, despite prior studies identifying prolonged grief associated with animal care work (Chang & Hart, 2002; Deacon & Brough, 2021; Englefield et al., 2019; Marton et al., 2020). Bereavement debriefing has been associated with greater wellbeing for human healthcare workers (Harder et al., 2020; Keene et al., 2010), and ACWs have indicated they may benefit from group support sessions following animal losses (Marton et al., 2020). Further research is required to identify interventions that boost the wellbeing of ACWs who have experienced a loss at work. Our data suggest organizational support may be important in such interventions.

Greater organizational support was found to be significantly correlated with less severe grief, PTSD symptoms, and psychological distress. ACWs' perceptions of their

organization's support for them also emerged as the strongest predictor of burnout, indicating that organizational support may be an important job resource for ACWs. Similarly, in their qualitative responses, many participants identified positives that are under organizational control, such as opportunities for professional development and the availability of time for meaningful interactions with human and animal clients. The downsides of animal care work identified by some participants also included factors controlled by organizations, such as high workloads. These results are unsurprising considering prior research, which shows negative associations between organizational support and burnout in many types of care workers (Maslach et al., 2001), including ACWs (Black et al., 2011). Further, McKenzie et al. (2020) reported that lack of workplace support was the most common reason veterinary workers sought help from a mental health service in the UK, and prior studies indicate many ACWs think their organizations disregard worker wellbeing (Englefield et al., 2019; Marton et al., 2020). In spite of these findings, interventions that improve organizational support in animal care workplaces have not, to our knowledge, been explored. In other care workplaces, leadership styles that empower workers have been shown to boost workers' perceptions that they are supported, and this boost has been associated with increased worker wellbeing (Daeho et al., 2018). It is possible that teaching animal care leaders to empower their workers may similarly benefit ACWs, though more research is needed to inform such an intervention.

In contrast to organizational support, our findings on social support were not as expected. ISS scores were only weakly correlated with adverse psychological outcomes and they did not significantly predict burnout. This result was surprising given prior findings that higher social support is associated with reduced grief severity in people who have lost their own companion animal (Lavorgna & Hutton, 2019), and that satisfaction with support from extended family and friends is negatively associated with burnout in social workers (Sánchez-Moreno et al., 2015). It is possible that organizational support is more important for ACWs than informal support from people outside their workplaces. Our qualitative data are consistent with this idea, with many participants describing team cohesion, knowledge-sharing, and positive interactions with their peers as aspects of the work they enjoyed. This finding is consistent with prior research that indicates many ACWs value support from coworkers more highly than support from friends and family, who may fail to understand the unique challenges presented by animal care work (Marton et al., 2020). However, given the central role of social support in mitigating burnout in many other caring professionals (Maslach et al., 2001), more research is needed to understand potential interactions between social support and mental ill-health in ACWs.

As with social support, our findings regarding empathy for animals were not in line with prior expectations. We found empathy for animals negatively predicted burnout, but only weakly and only for personal burnout. Furthermore, empathy was only weakly correlated with grief and was not significantly correlated with PTSD symptoms nor psychological distress. It is possible empathy for animals may not be a factor affecting ACWs' mental health; however, this conclusion should be treated cautiously owing to our use of the AES, which only measures emotional empathy (Paul, 2000). Cognitive empathy has been theorized to facilitate exceptional caring (Wagaman et al., 2015), and prior studies have identified negative associations between cognitive empathy and

burnout (Hunt et al., 2017), but the same has not been shown for emotional empathy. We could find no other measure of empathy for animals, so the AES was the best choice for our study. However, future research will benefit from developing a measure of both emotional and cognitive components of animal-oriented empathy. Given that veterinarians report higher-than-normal empathy for animals (Colombo et al., 2017) and that empathy for animals is a frequently identified motivator for ACWs' choice of work (Bennett & Rohlf, 2005; Englefield et al., 2019), future research should aim to better identify the influence of empathy on ACW wellbeing.

Positive Characteristics of Animal Care Work

Analysis of what ACWs liked about their roles also uncovered potential strategies to enhance worker wellbeing. Professional accomplishment was the most frequently cited positive characteristic of animal care work, with ACWs most often identifying good outcomes for the animals in their care as an accomplishment they enjoyed. This finding is consistent with research on human healthcare nurses, who report greater job satisfaction associated with good patient outcomes (Lu et al., 2005). Likewise, ACWs in our sample cited specific achievements and mastery of new and complex skills as professional accomplishments they enjoyed, consistent with positive associations between job satisfaction and the use of specialist skills by midwives (Bloxsome et al., 2019). Additionally, several ACWs in the current sample described their contributions to the bigger picture of animal welfare and conservation as a professional accomplishment that they found positive, consistent with the literature on meaningful work (Steger et al., 2012). Overall, these results are consistent with our findings on organizational support outlined above, adding to the evidence that animal care organizations likely play a central role in maintaining the wellbeing of their workers. For example, and consistent with the literature on positive occupational psychology (Bakker & Derks, 2010), ACWs may benefit from their employers highlighting and facilitating their professional accomplishments.

In addition to professional accomplishments, our participants cited interpersonal interactions with clients and colleagues as something they liked about their work. Enjoying client interactions is consistent with findings on midwives, who identified positive relationships with their patients as something that boosted their job satisfaction (Bloxsome et al., 2019). Likewise, enjoying interactions with colleagues is consistent with studies on human healthcare nurses, for whom job satisfaction is linked to team cohesion (Lu et al., 2005). It is, therefore, possible that organizational policies aimed at facilitating enjoyable interactions amongst colleagues may benefit ACWs, in line with prior findings on the relationship between fun at work and workplace engagement (Plester & Hutchinson, 2016). Furthermore, favorable interactions with colleagues, particularly supervisors, have been strongly associated with greater perceived organizational support (Kurtessis et al., 2017). Given that organizational support was the strongest predictor of burnout in our sample, the potential to boost organizational support through harnessing favorable interactions amongst ACWs in the workplace is a promising area for future research.

Many ACWs also identified favorable interactions with animals as a positive characteristic of their work, echoing the positive association between midwives' job satisfaction and patient relationships discussed above (Bloxsome et al., 2019). Furthermore, although some replication failures and lack of controlled designs mean additional research is

needed to establish the strength and nature of the effects of pets on human health, multiple studies have documented positive associations between interacting with animals and increased wellbeing in humans (for reviews, see Beetz et al., 2012; Brooks et al., 2018; Herzog, 2011; Hughes et al., 2020). Likewise, mindful interactions with pet dogs have been associated with increased happiness in pet owners (Jackson-Grossblat et al., 2016). As such, it is possible policies that allow time for ACWs to interact positively and mindfully with the animals in their care may boost workers' wellbeing (Foreman et al., 2017; Wagner & Pina E Cunha, 2021).

Limitations

The gender composition of our sample presents a limitation, with approximately 91% of the sample identifying as female. As women tend to experience higher rates of mental disorders than men, including symptoms related to anxiety, depression, and PTSD (Australian Bureau of Statistics, 2022; Tolin & Foa, 2006), the high rates of psychological distress and PTSD symptoms in our sample could be partially explained by the participants' gender, rather than their occupation. However, given that animal care work is likely to be female-dominated, as is the case for veterinarians (Australian Veterinary Association, 2018), these findings point to potential pre-existing vulnerabilities in this workforce. These vulnerabilities should be accounted for in efforts to improve workers' mental health and wellbeing.

A further limitation of our study was the use of a cross-sectional design, which constrains the inferences that can be made from our data. For example, the first COVID-19 lockdowns occurred during our data collection phase, and studies on veterinary and other care workers suggest they experienced changes to workloads, procedures, conditions, and hours at this time (Halcomb et al., 2020; Havaei et al., 2021; Khajuria et al., 2021; Wayne & Rozanski, 2020). Heightened stress associated with these changes may have produced a cohort effect in our data by contributing to higher scores on mental health measures. Nevertheless, our results are consistent with pre-pandemic findings, and this combined evidence demonstrates the need for ACWs' mental health and wellbeing to be better supported. The cross-sectional design enabled us to rapidly explore the experiences of this under-researched population and uncover factors that could be harnessed in future efforts to develop interventions that support worker wellbeing. This rapid exploration was needed, given that understanding ACWs is becoming increasingly urgent due to the current worker shortages (Clarke, 2022; Huezenroeder & Stephens, 2021; Roy, 2021) and the growing demand for animal care services as pet populations and human-wildlife conflicts increase (Animal Medicines Australia, 2019; Australian Bureau of Statistics, 1995; Englefield et al., 2019; Guy & Banks, 2012; WIRES, n.d.).

Conclusion

We aimed to explore mental ill-health in ACWs and identify possible risk and protective factors related to their wellbeing. On average, our participants scored highly on measures of mental ill-health, consistent with previous findings on ACWs. Grief and organizational support emerged as significant predictors of burnout, suggesting these factors may be

key to understanding how to best support ACWs. Analysis of what our participants liked about their roles also identified several factors that could be leveraged in efforts to boost their wellbeing. Many of these factors are under the control of animal care organizations, suggesting future efforts to improve the wellbeing of ACWs will benefit from an organizational focus. Additional research is vital in the context of a worsening shortage of these in-demand workers. Properly supporting their psychological health may help retain ACWs in the workforce, and more research is needed so interventions can be tailored to their unique needs.

Acknowledgements

Foremost, the authors thank all the animal care workers who participated in this research. We also express our appreciation to the individuals and organizations who helped us recruit participants by sharing this study with their networks.

Disclosure Statement

No potential conflict of interest was reported by the authors.

References

- Adwan, J. Z. (2014). Pediatric nurses' grief experience, burnout and job satisfaction. *Journal of Pediatric Nursing*, 29(4), 329–336. <https://doi.org/10.1016/j.pedn.2014.01.011>
- Andrukonis, A., & Protopopova, A. (2020). Occupational health of animal shelter employees by live release rate, shelter type, and euthanasia-related decision. *Anthrozoös*, 33(1), 119–131. <https://doi.org/10.1080/08927936.2020.1694316>
- Animal Medicines Australia. (2019). *Pets in Australia: A national survey of pets and people*. <https://animalmedicinesaustralia.org.au/2019/10/pets-in-australia-a-national-survey-of-pets-and-people/>
- Arvidsdotter, T., Marklund, B., Kylén, S., Taft, C., & Ekman, I. (2016). Understanding persons with psychological distress in primary health care. *Scandinavian Journal of Caring Sciences*, 30(4), 687–694. <https://doi.org/10.1111/scs.12289>
- Australian Bureau of Statistics. (1995). *Special feature: Household pets*. <https://www.abs.gov.au/AUSSTATS/abs@.nsf/2f762f95845417aeca25706c00834efa/5EF8016F420622A3CA2570EC00753524?opendocument>
- Australian Bureau of Statistics. (2022). *National study of mental health and wellbeing*. <https://www.abs.gov.au/statistics/health/mental-health/national-study-mental-health-and-wellbeing/latest-release#prevalence-of-mental-disorders>
- Australian Veterinary Association. (2015). *Fair work commission – Response to exposure draft, animal care and veterinary services award*. <https://www.ava.com.au/policy-advocacy/advocacy/economic/award-modernisation/>
- Australian Veterinary Association. (2018). *Australian veterinary workforce survey 2018*. <https://www.ava.com.au/policy-advocacy/advocacy/workforce/workforce-data/>
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309–328. <https://doi.org/10.1108/02683940710733115>
- Bakker, A. B., & Derks, D. (2010). Positive occupational health psychology. In S. Leka & J. Houdmont (Eds.), *Occupational health psychology* (pp. 194–224). Blackwell Publishing Ltd.
- Betz, A., Uvnäs-Moberg, K., Julius, H., & Kotrschal, K. (2012). Psychosocial and psychophysiological effects of human–animal interactions: The possible role of oxytocin. *Frontiers in Psychology*, 3, 234. <https://doi.org/10.3389/fpsyg.2012.00234>

- Bennett, P., & Rohlf, V. (2005). Perpetration-induced traumatic stress in persons who euthanize non-human animals in surgeries, animal shelters, and laboratories. *Society & Animals*, 13(3), 201–220. <https://doi.org/10.1163/1568530054927753>
- Black, A. F., Winefield, H. R., & Chur-Hansen, A. (2011). Occupational stress in veterinary nurses: Roles of the work environment and own companion animal. *Anthrozoös*, 24(2), 191–202. <https://doi.org/10.2752/175303711X12998632257503>
- Bloxsome, D., Ireson, D., Doleman, G., & Bayes, S. (2019). Factors associated with midwives' job satisfaction and intention to stay in the profession: An integrative review. *Journal of Clinical Nursing*, 28(3-4), 386–399. <https://doi.org/10.1111/jocn.14651>
- Brooks, H. L., Rushton, K., Lovell, K., Bee, P., Walker, L., Grant, L., & Rogers, A. (2018). The power of support from companion animals for people living with mental health problems: A systematic review and narrative synthesis of the evidence. *BMC Psychiatry*, 18(1), 31. <https://doi.org/10.1186/s12888-018-1613-2>
- Chang, F. T., & Hart, L. A. (2002). Human–animal bonds in the laboratory: How animal behavior affects the perspective of caregivers. *ILAR Journal*, 43(1), 10–18. <https://doi.org/10.1093/ilar.43.1.10>
- Clark, S., Marley, J., Hiller, J. E., Leahy, C., & Pratt, N. (2006). A grief diagnostic instrument for general practice. *OMEGA – Journal of Death and Dying*, 52(2), 169–195. <https://doi.org/10.2190/9AP6-DGY9-EY2Y-Q4M8>
- Clarke, B. (2022, June). National vet shortage leads to increased abuse, closures and stress at regional clinics. *ABC News*. <https://www.abc.net.au/news/rural/2022-06-05/vets-eyre-peninsula-under-pressure-national-shortage/101116706#:~:text=The%20national%20vet%20shortage%20is,higher%20than%20the%20general%20population>
- Clise, M. H., Kirby, N., & McArthur, M. L. (2021). Is veterinary work more than satisfying? A critical review of the literature. *Veterinary Record*, 188(10), e77. <https://doi.org/10.1002/vetr.77>
- Cohen, J. (2013). *Statistical power analysis for the behavioural sciences* (2nd ed.). Routledge. <https://doi.org/10.4324/9780203771587>
- Colombo, E. S., Crippa, F., Calderari, T., & Prato-Previde, E. (2017). Empathy toward animals and people: The role of gender and length of service in a sample of Italian veterinarians. *Journal of Veterinary Behavior*, 17, 32–37. <https://doi.org/10.1016/j.jveb.2016.10.010>
- Cuff, B. M. P., Brown, S. J., Taylor, L., & Howat, D. J. (2016). Empathy: A review of the concept. *Emotion Review*, 8(2), 144–153. <https://doi.org/10.1177/1754073914558466>
- Daeho, K., Chul Woo, M., & Shin, J. (2018). Linkages between empowering leadership and subjective well-being and work performance via perceived organizational and co-worker support. *Leadership & Organization Development Journal*, 39(7), 844–858. <https://doi.org/10.1108/LODJ-06-2017-0173>
- Deacon, R. E., & Brough, P. (2021). Companion animal death and client bereavement: A qualitative investigation of veterinary nurses' caregiving experiences. *Death Studies*, 805–816. <https://doi.org/10.1080/07481187.2019.1696424>
- Doyle, L., Brady, A.-M., & Byrne, G. (2009). An overview of mixed methods research. *Journal of Research in Nursing*, 14(2), 175–185. <https://doi.org/10.1177/1744987108093962>
- Dugani, S., Afari, H., Hirschhorn, L. R., Ratcliffe, H., Veillard, J., Martin, G., Lagomarsino, G., Basu, L., & Bitton, A. (2018). Prevalence and factors associated with burnout among frontline primary health care providers in low- and middle-income countries: A systematic review. *Gates Open Research*, 2, 4. <https://doi.org/10.12688/gatesopenres.12779.1>
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71(3), 500–507. <https://doi.org/10.1037/0021-9010.71.3.500>
- Englefield, B., Candy, S., Starling, M., & McGreevy, P. (2019). The demography and practice of Australians caring for native wildlife and the psychological, physical and financial effects of rescue, rehabilitation and release of wildlife on the welfare of carers. *Animals*, 9(12), 1127. <https://doi.org/10.3390/ani9121127>
- Ferri, P., Guerra, E., Marcheselli, L., Cunico, L., & Di Lorenzo, R. (2015). Empathy and burnout: An analytic cross-sectional study among nurses and nursing students. *Acta Biomed for Health Professionals*, 86(S2), 104–115. <https://iris.unimore.it/handle/11380/1075631#.XoUfEYgzY2w>

- Foreman, A. M., Glenn, M. K., Meade, B. J., & Wirth, O. (2017). Dogs in the workplace: A review of the benefits and potential challenges. *International Journal of Environmental Research and Public Health*, 14(5), 498. <https://doi.org/10.3390/ijerph14050498>
- Fournier, A. K., & Mustful, B. (2019). Loss and grief in animal-care agents. In L. Kogan & P. Erdman (Eds.), *Pet loss, grief, and therapeutic interventions: Practitioners navigating the human–animal bond* (pp. 99–123). Routledge.
- Fritschi, L., Morrison, D., Shirangi, A., & Day, L. (2009). Psychological well-being of Australian veterinarians. *Australian Veterinary Journal*, 87(3), 76–81. <https://doi.org/10.1111/j.1751-0813.2009.00391.x>
- Guy, A. J., & Banks, P. (2012). A survey of current rehabilitation practices for native mammals in eastern Australia. *Australian Mammalogy*, 34(1), 108–118. <https://doi.org/10.1071/AM10046>
- Halcomb, E., McInnes, S., Williams, A., Ashley, C., James, S., Fernandez, R., Stephen, C., & Calma, K. (2020). The experiences of primary healthcare nurses during the COVID-19 pandemic in Australia. *Journal of Nursing Scholarship*, 52(5), 553–563. <https://doi.org/10.1111/jnu.12589>
- Hall, M. J., Ng, A., Ursano, R. J., Holloway, H., Fullerton, C., & Casper, J. (2004). Psychological impact of the animal–human bond in disaster preparedness and response. *Journal of Psychiatric Practice*, 10(6), 368–374. <https://doi.org/10.1097/00131746-200411000-00005>
- Harder, B. N., Lemoine, J., & Harwood, R. (2020). Psychological outcomes of debriefing healthcare providers who experience expected and unexpected patient death in clinical or simulation experiences: A scoping review. *Journal of Clinical Nursing*, 29(3–4), 330–346. <https://doi.org/10.1111/jocn.15085>
- Hatch, P. H., Winefield, H. R., Christie, B. A., & Lievaart, J. J. (2011). Workplace stress, mental health, and burnout of veterinarians in Australia. *Australian Veterinary Journal*, 89(11), 460–468. <https://doi.org/10.1111/j.1751-0813.2011.00833.x>
- Havaei, F., Ma, A., Staempfli, S., & MacPhee, M. (2021). Nurses' workplace conditions impacting their mental health during COVID-19: A cross-sectional survey study. *Healthcare*, 9(1), 84. <https://doi.org/10.3390/healthcare9010084>
- Heath, T. J. (2007). Longitudinal study of veterinary students and veterinarians: The first 20 years. *Australian Veterinary Journal*, 85(7), 281–289. <https://doi.org/10.1111/j.1751-0813.2007.00172.x>
- Herzog, H. (2011). The impact of pets on human health and psychological well-being. *Current Directions in Psychological Science*, 20(4), 236–239. <https://doi.org/10.1177/0963721411415220>
- Hogan, N. S., & Schmidt, L. A. (2002). Testing the grief to personal growth model using structural equation modeling. *Death Studies*, 26(8), 615–634. <https://doi.org/10.1080/07481180290088338>
- Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277–1288. <https://doi.org/10.1177/1049732305276687>
- Huezenroeder, C., & Stephens, M. (2021, February). Riverland veterinary closes after 30 years as national vet shortage hits regional SA. *ABC News*. <https://www.abc.net.au/news/2021-02-08/regional-veterinary-closes-due-to-vet-shortage/13131676>
- Hughes, M. J., Verreyne, M.-L., Harpur, P., & Pachana, N. A. (2020). Companion animals and health in older populations: A systematic review. *Clinical Gerontologist*, 43(4), 365–377. <https://doi.org/10.1080/07317115.2019.1650863>
- Hunt, P. A., Denieffe, S., & Gooney, M. (2017). Burnout and its relationship to empathy in nursing: A review of the literature. *Journal of Research in Nursing*, 22(1–2), 7–22. <https://doi.org/10.1177/1744987116678902>
- Jackson-Grossblat, A., Carbonell, N., & Waite, D. (2016). The therapeutic effects upon dog owners who interact with their dogs in a mindful way. *Journal of Humanistic Psychology*, 56(2), 144–170. <https://doi.org/10.1177/0022167814559390>
- Keene, E. A., Hutton, N., Hall, B., & Rushton, C. (2010). Bereavement debriefing sessions: An intervention to support health care professionals in managing their grief after the death of a patient. *Pediatric Nursing*, 36(4), 185–190.
- Khajuria, A., Tomaszewski, W., Liu, Z., Chen, J.-h., Mehdian, R., Fleming, S., Vig, S., & Crawford, M. J. (2021). Workplace factors associated with mental health of healthcare workers during the COVID-

- 19 pandemic: An international cross-sectional study. *BMC Health Services Research*, 21(1), 262. <https://doi.org/10.1186/s12913-021-06279-6>
- 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>
- Kurtessis, J. N., Eisenberger, R., Ford, M. T., Buffardi, L. C., Stewart, K. A., & Adis, C. S. (2017). Perceived organizational support: A meta-analytic evaluation of organizational support theory. *Journal of Management*, 43(6), 1854–1884. <https://doi.org/10.1177/0149206315575554>
- Lavorgna, B. F., & Hutton, V. E. (2019). Grief severity: A comparison between human and companion animal death. *Death Studies*, 43(8), 521–526. <https://doi.org/10.1080/07481187.2018.1491485>
- Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Psychology Foundation.
- Lu, H., While, A. E., & Barriball, K. L. (2005). Job satisfaction among nurses: A literature review. *International Journal of Nursing Studies*, 42(2), 211–227. <https://doi.org/10.1016/j.ijnurstu.2004.09.003>
- Makita, K., Tsuji, A., Iki, Y., Kurosawa, A., Kadowaki, H., Tsutsumi, A., Nogami, T., & Watari, M. (2015). Mental and physical distress of field veterinarians during and soon after the 2010 foot and mouth disease outbreak in Miyazaki, Japan. *Revue Scientifique et Technique de l'OIE*, 34(3), 699–712. <https://doi.org/10.20506/rst.34.3.2387>
- Marton, B., Kilbane, T., & Nelson-Becker, H. (2020). Exploring the loss and disenfranchised grief of animal care workers. *Death Studies*, 44(1), 31–41. <https://doi.org/10.1080/07481187.2018.1519610>
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397–422. <https://doi.org/10.1146/annurev.psych.52.1.397>
- McKenzie, A., Allister, R., Humphrey, D., Moore, K., Greenberg, K., & Greenberg, N. (2020). An evaluation of a veterinary-specific mental health service. *Occupational Medicine*, 70(3), 169–175. <https://doi.org/10.1093/occmed/kqaa017>
- Meller, N., Parker, D., Hatcher, D., & Sheehan, A. (2019). Grief experiences of nurses after the death of an adult patient in an acute hospital setting: An integrative review of literature. *Collegian*, 26(2), 302–310. <https://doi.org/10.1016/j.colegn.2018.07.011>
- Monaghan, H., Rohlf, V., Scotney, R., & Bennett, P. (2020). Compassion fatigue in people who care for animals: An investigation of risk and protective factors. *Traumatology*. Advance online publication. <https://doi.org/10.1037/trm0000246>
- Paul, E. S. (2000). Empathy with animals and with humans: Are they linked? *Anthrozoös*, 13(4), 194–202. <https://doi.org/10.2752/089279300786999699>
- Plester, B., & Hutchison, A. (2016). Fun times: The relationship between fun and workplace engagement. *Employee Relations*, 38(3), 332–350. <https://doi.org/10.1108/ER-03-2014-0027>
- Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology*, 87(4), 698–714. <https://doi.org/10.1037/0021-9010.87.4.698>
- Ridner, S. H. (2004). Psychological distress: Concept analysis. *Journal of Advanced Nursing*, 45(5), 536–545. <https://doi.org/10.1046/j.1365-2648.2003.02938.x>
- Rohlf, V. I. (2018). Interventions for occupational stress and compassion fatigue in animal care professionals—A systematic review. *Traumatology*, 24(3), 186–192. <https://doi.org/10.1037/trm0000144>
- Roy, T. (2021, May 17). Veterinary industry grapples with high suicide rate amid staff shortages, inadequate pay. *ABC News*. <https://www.abc.net.au/news/2021-05-17/veterinary-industry-grapples-with-high-suicide-rate/100142650>
- Sánchez-Moreno, E., de La Fuente Roldán, I.-N., Gallardo-Peralta, L. P., & Barrón López de Roda, A. (2015). Burnout, informal social support and psychological distress among social workers. *British Journal of Social Work*, 45(8), 2368–2386. <https://doi.org/10.1093/bjsw/bcu084>
- Steger, M. F., Dik, B. J., & Duffy, R. D. (2012). Measuring meaningful work. *Journal of Career Assessment*, 20(3), 322–337. <https://doi.org/10.1177/1069072711436160>
- Tei, S., Becker, C., Kawada, R., Fujino, J., Jankowski, K. F., Sugihara, G., Murai, T., & Takahashi, H. (2014). Can we predict burnout severity from empathy-related brain activity? *Translational Psychiatry*, 4(6), e393–e393. <https://doi.org/10.1038/tp.2014.34>

- Tolin, D. F., & Foa, E. B. (2006). Sex differences in trauma and posttraumatic stress disorder: A quantitative review of 25 years of research. *Psychological Bulletin*, 132(6), 959–992. <https://doi.org/10.1037/0033-2909.132.6.959>
- Varela, M., & Correia, I. (2022). Empathy and burnout in veterinarians and veterinary nurses: Identifying burnout protectors. *Anthrozoös*, 36(1), 15–34. <https://doi.org/10.1080/08927936.2022.2074189>
- Wagaman, M. A., Geiger, J. M., Shockley, C., & Segal, E. A. (2015). The role of empathy in burnout, compassion satisfaction, and secondary traumatic stress among social workers. *Social Work*, 60(3), 201–209. <https://doi.org/10.1093/sw/swv014>
- Wagner, E., & Pina E Cunha, M. (2021). Dogs at the workplace: A multiple case study. *Animals*, 11(1), 89. <https://doi.org/10.3390/ani11010089>
- Wayne, A. S., & Rozanski, R. A. (2020). Cataloguing the response by emergency veterinary hospitals during the COVID-19 pandemic via weekly surveys. *Journal of Veterinary Emergency and Critical Care*, 30(4), 493–497. <https://doi.org/10.1111/vec.12974>
- Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). *The PTSD checklist for DSM-5 (PCL-5)*. www.ptsd.va.gov
- West, C. P., Dyrbye, L. N., & Shanafelt, T. D. (2018). Physician burnout: Contributors, consequences and solutions. *Journal of Internal Medicine*, 283(6), 516–529. <https://doi.org/10.1111/joim.12752>
- Wilkinson, H., Whittington, R., Perry, L., & Eames, C. (2017). Examining the relationship between burnout and empathy in healthcare professionals: A systematic review. *Burnout Research*, 6, 18–29. <https://doi.org/10.1016/j.burn.2017.06.003>
- WIRES. (n.d.). *About WIRES*. <https://www.wires.org.au/about-wires>
- Worden, J. W. (2018). *Grief counseling and grief therapy: A handbook for the mental health practitioner* (5th ed.). Springer.
- World Health Organisation. (2019). *International statistical classification of diseases and related health problems* (11th ed.). <https://icd.who.int/>
- Yeung, P., White, B., & Chilvers, B. L. (2017). Exploring wellness of wildlife carers in New Zealand: A descriptive study. *Anthrozoös*, 30(4), 549–563. <https://doi.org/10.1080/08927936.2017.1370213>