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**Citation:** King, N., Lewis, E. G., Kinnison, T., Langridge, A., Civai, C., May, S. A. & Cardwell, J. M. (2024). Mental health of veterinary nurses and student veterinary nurses: A scoping review. *Veterinary Record*, 194(9), e4091. doi: 10.1002/vetr.4091

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## REVIEW

# Mental health of veterinary nurses and student veterinary nurses: A scoping review

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## Funding information

IDEXX Foundation

## Abstract

**Background:** Research has shown that veterinarians around the world are at high risk of mental health problems, but far less research has examined the mental health of veterinary nurses (VNs) and student veterinary nurses (SVNs). This scoping review aimed to map existing evidence on this topic and identify knowledge gaps.

**Methods:** Literature searches of MEDLINE, PsycINFO, PubMed, Web of Science and Google Scholar were conducted, and a structured screening and selection procedure was applied. To be included, studies had to be peer reviewed, report relevant results specific to VNs and/or SVNs, and provide descriptive statistics if using quantitative methods.

**Results:** Of the 2118 publications identified, only 13 journal articles met the inclusion criteria. The findings were summarised in five categories: mental health and wellbeing, burnout, stress, compassion fatigue and moral distress. While the findings of five of the studies suggested that some VNs and SVNs experienced some form of poor mental health, these studies lacked generalisability or transferability for multiple reasons. There was also inconsistency and ambiguity in the interpretation of findings, as well as incompatible or oversimplified definitions of mental health problems.

**Limitations:** Our review excluded grey literature, such as reports, theses and conference presentations, as a preliminary search found very little empirical research on VNs' and SVNs' mental health in this type of publication.

**Conclusions:** More research is needed to address the gaps in the existing evidence supporting our understanding of VN and SVN mental health. This should establish baseline measures and include comparisons with other occupational and national populations.

## INTRODUCTION

Research on mental health in veterinary professionals around the world has focused predominantly on veterinarians, finding that they are at high risk of stress, anxiety, depression, burnout, compassion fatigue and suicidal ideation.<sup>1</sup> Potential risk factors include heavy workloads, long working hours, poor work–life balance, unreasonable client expectations and demands, ethical and moral challenges, and the performance of euthanasia.<sup>1,2</sup> Research using validated psychometric scales, in the UK and United States, also suggests that veterinary students experience poorer wellbeing and mental health than approximately age-

matched general population groups<sup>3,4</sup> or some other student groups.<sup>5,6</sup> Far less research has focused on veterinary nurses (VNs) or student veterinary nurses (SVNs), despite their vital role in effective veterinary teamwork.<sup>7</sup>

Some anecdotal evidence<sup>8,9</sup> suggests that VNs and SVNs experience a range of mental health problems, but it is unclear whether they differ from the general population. The Royal College of Veterinary Surgeons reported that a 2019 survey of 4993 UK VNs<sup>10</sup> found lower mean Warwick–Edinburgh Mental Wellbeing Scale (WEMWBS) scores, suggesting poorer wellbeing, in VNs than in the general population of England in 2016.<sup>11</sup> However, the difference was not significant

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**TABLE 1** Search terms used.

Database or search engine	Search terms
MEDLINE, PsycINFO, Web of Science (advanced search)	'veterinary nurse' OR 'veterinary nursing' OR 'veterinary professional' OR 'veterinary practice' (first search box) AND 'mental health' OR 'wellbeing' OR 'well-being' OR 'mental disorder' OR 'mental diagnosis' OR 'mental illness' OR 'mental problem' OR 'mental condition' OR 'psychological' OR 'anxiety' OR 'stress' OR 'distress' OR 'depression' OR 'depressive' OR 'burnout' OR 'burned out' OR 'compassion fatigue' OR 'grief' OR 'moral distress' OR 'moral injury' OR 'depersonalisation' OR 'depersonalization' OR 'emotional turmoil' OR 'cynicism' OR 'cynical' OR 'fatigue' OR 'insomnia' OR 'exhaustion' OR 'suicide' OR 'suicidal' (second search box)
PubMed (advanced search)	'veterinary nurse' OR 'veterinary nursing' OR 'veterinary professional' OR 'veterinary practice' (first search box) AND 'mental health' OR 'wellbeing' OR 'well-being' OR 'mental disorder' OR 'mental diagnosis' OR 'mental illness' OR 'mental problem' OR 'mental condition' OR 'psychological' (second search box)
Google Scholar	'veterinary nurse' OR 'veterinary nursing' AND 'mental health' OR 'wellbeing' OR 'well-being' OR 'mental disorder' OR 'mental diagnosis' OR 'mental illness' OR 'mental problem' OR 'mental condition' OR 'psychological'

tested, it was not a contemporaneous comparison and the scores were not sufficiently low to be indicative of depression.<sup>12</sup> In another investigation, which examined the effects of sustained bullying in the veterinary profession,<sup>13</sup> 390 VNs reported experiencing at least one form of bad behaviour or bullying, almost one-third of whom related it to poor mental health in free-text responses. In a recent Mind Matters and VN Futures survey,<sup>14</sup> completed by around 650 SVNs, recently qualified VNs and clinical coaches, 96% agreed that bullying and incivility were problems in the profession, 81% agreed that their work was stressful and 75% thought that the demands of work and studying affected their wellbeing.

However, to date, there are no comprehensive reviews of empirical studies assessing the mental health of VNs and SVNs, and therefore no clear evidence synthesis. This review addresses this gap by focusing on two research questions: (1) how prevalent are mental health problems in VNs and SVNs? and (2) what types of mental health problems do VNs and SVNs experience? It conceptualises 'mental health problems' in a broad sense, including but not limited to clinically diagnosed mental health disorders or illnesses.

## METHODS

A scoping review was conducted in line with the framework proposed by Arksey and O'Malley<sup>15</sup> and expanded by Levac et al.<sup>16</sup> Scoping reviews are optimal for mapping existing evidence and identifying knowledge gaps, especially for topics that are emerging and underexplored, in contrast to systematic reviews that focus on more specific questions and critical appraisal.<sup>15,17</sup> Where appropriate, the review was reported in line with the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist.<sup>18</sup>

## Information sources and search strategy

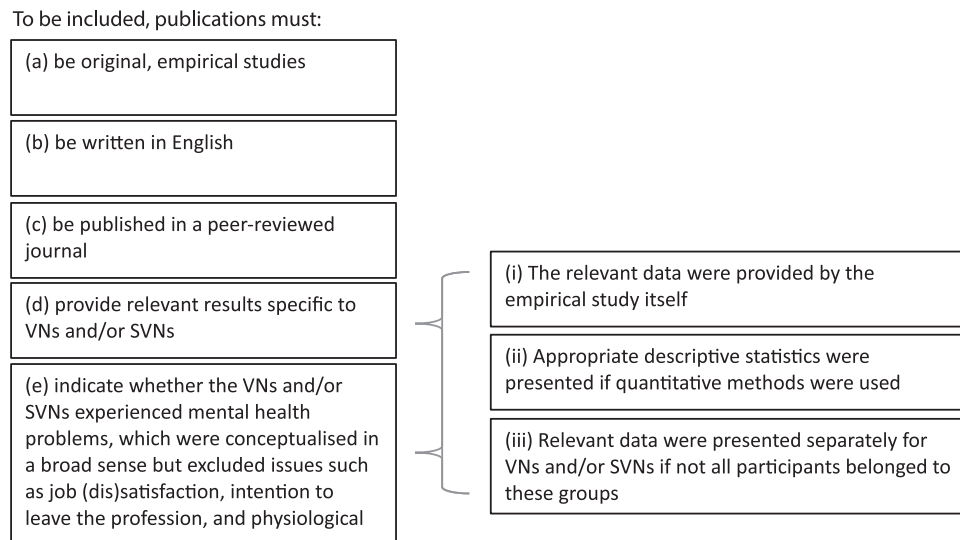
Four electronic databases (MEDLINE, PsycINFO, PubMed and Web of Science) were used, in addition to Google Scholar, which has been found to add value to literature searches.<sup>19,20</sup> Searches were restricted to journal articles, but no publication date limit was applied. The search terms are provided in Table 1. The number of these was reduced for PubMed and Google Scholar, as initial searches generated 2,657,174 publications from PubMed and about 9750 from Google Scholar. The terms 'veterinary technician', 'veterinary technologist' and 'vet tech' were not included. Although these roles in the United States and Canada are similar to those of the VN in the UK, Ireland and Australasia, the definitions and terminologies vary between states and countries. For clarity and consistency, this review focused only on VNs. The final search produced 229 publications from MEDLINE, 23 from PsycINFO, 110 from PubMed, 296 from Web of Science and about 1460 from Google Scholar. Manual searching of reference lists was conducted on all publications subjected to full-text screening.

## Inclusion criteria

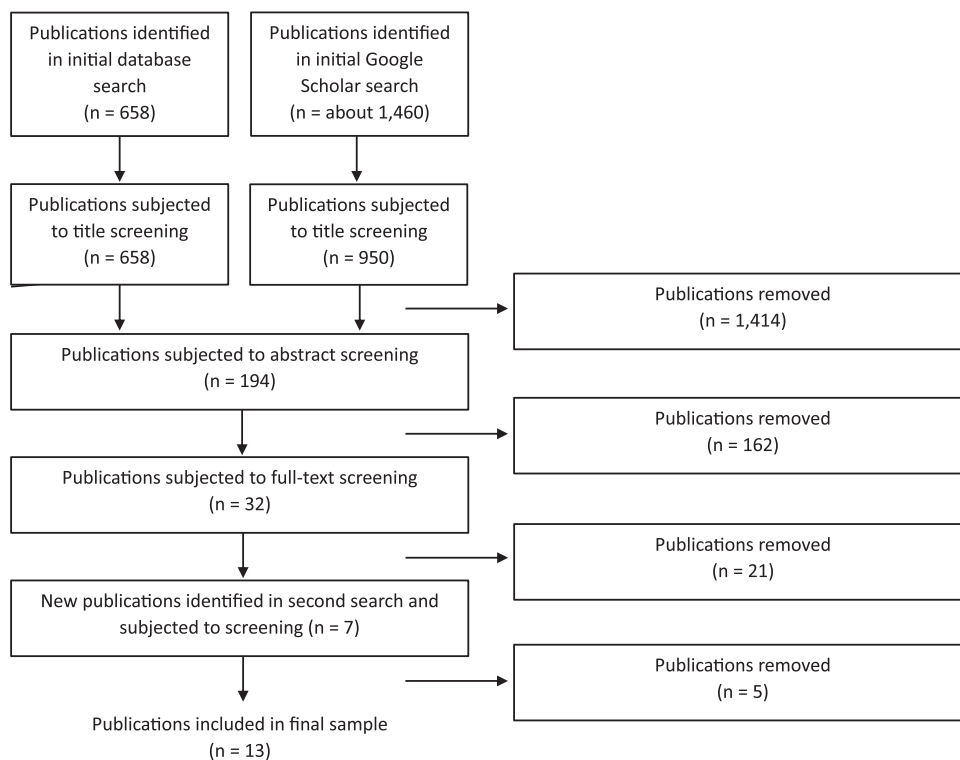
Inclusion criteria (Figure 1) were developed iteratively during screening and selection, in line with Levac et al.'s<sup>16</sup> recommendations.

## Screening and selection procedure

Titles of the 658 publications from the four databases and the first 950 publications from Google Scholar were screened in March 2023 by the first author (Naomi King). The last 400 of these 950 publications were clearly irrelevant, so the remaining Google Scholar publications were excluded without screening. Of the 1608 title-screened publications, 1414 were



**FIGURE 1** Inclusion criteria and sub-criteria. SVN, student veterinary nurse; VN, veterinary nurse



**FIGURE 2** Flow diagram of the screening and selection procedure

removed because they were duplicates or did not meet the inclusion criteria. A further 162 of the remaining 194 publications were removed after abstract screening because they did not meet the inclusion criteria. Thirty-two publications were then subjected to full-text screening, and another 21 publications were removed because they did not meet inclusion criteria (i) to (iii). A second search of all databases and Google Scholar was conducted in September 2023 by the first author, and seven new publications were screened in the same way. Figure 2 outlines the full screening and selection procedure. The final sample comprised 13 publications.

## RESULTS

### Overview of publications reviewed

Of the 13 studies reviewed, the majority ( $n = 8$ ) were published between 2020 and 2023, and all but one were published between 2016 and 2023 (Table S1). Seven studies recruited only VNs and/or SVNs, while six included other veterinary professional roles. Studies were located in Australasia ( $n = 8$ ), the UK ( $n = 4$ ) and Portugal ( $n = 1$ ). Ten collected data relevant to this review from validated questionnaires, one of which also included an open-text question. Of

the remaining studies, one used non-validated questions, one used semi-structured interviews and one gathered open-text responses. The majority of studies had relatively small sample sizes; six analysed relevant data from fewer than 100 VNs and/or SVNs, four from fewer than 170, two from fewer than 290 and one from 992. No study directly aimed to investigate whether VNs and/or SVNs experienced mental health problems in general. Instead, they focused on specific, pre-defined mental health problems and/or explored potential causes, contexts, coping strategies or outcomes.

The findings are summarised below in five categories: mental health and wellbeing, burnout, stress, compassion fatigue and moral distress. In our synthesis, we have not included issues such as job dissatisfaction, disillusionment or poor physical health; these issues were examined by some of the studies reviewed, but while they are associated with poor mental health, they are not mental health problems in themselves. We also excluded positive aspects of mental health, such as compassion satisfaction, as low levels do not necessarily denote poor mental health and people can experience compassion satisfaction simultaneously with compassion fatigue.<sup>21</sup> The relevant data are shown in Tables S2–S6.

## Mental health and wellbeing

Four studies examined the broad concepts of mental health and wellbeing, three of which included only VNs/SVNs (Table S2). Bedford and Anscombe-Skirrow<sup>22</sup> focused primarily on disillusionment resulting from workplace bullying, but they also reported how the open-text responses of 273 VNs and SVNs showed that bullying led to ‘impairment of self-confidence’, ‘hindrance to working ability through decreased concentration and enjoyment’ and ‘colleague and task avoidance’. ‘Mental health’ and ‘reduced self-worth’ were mentioned by around 54% and 69% of participants, respectively, but it was unclear whether these were researcher-created categorisations or terms used by participants. No indications of question phrasing, analysis methods, evidence (e.g., participant quotes) or interpretations were provided. Deacon and Brough<sup>23</sup> examined the psychological impact of exposure to patient death and client bereavement using interview data from 26 VNs and former VNs who self-identified as having experienced occupational stress. Participants reported a range of distressing emotions, as well as high levels of ‘psychological strain’ and symptoms consistent with burnout and post-traumatic stress. However, there were some nuances; for some, compassionate euthanasia, for example, led not only to adverse emotions but also to a strong sense of job satisfaction and increased personal resilience. Van Soest and Fritschi<sup>24</sup> focused predominantly on physiological health hazards encountered by 147 VNs (145 of whom were female) from Australia and Tasmania but also assessed ‘job-related affective well-

being’ using the anxiety-contentment and depression-enthusiasm axes of Warr’s<sup>25</sup> scale. The mean scores were similar (not significance tested) to those of Warr’s 847 female workers in comparably skilled jobs in the UK, suggesting that the VNs did not experience poorer mental health. However, these two populations were 14 years apart and in different countries.

The study by Mair et al.<sup>26</sup> examined the ‘mental wellbeing’ of 451 equine veterinary staff, including 20 equine VNs/SVNs, in the UK during the COVID-19 pandemic using the WEMWBS. The VNs/SVNs had a lower mean score, suggesting poorer wellbeing, than the veterinary surgeons in the same study and the equine veterinary staff in a pre-pandemic 2019 survey,<sup>27</sup> but these differences in means were not significance tested. The authors noted that while a low score could be interpreted as indicative of possible depression, it should be interpreted extremely cautiously due to the very low number of VNs and SVNs surveyed.

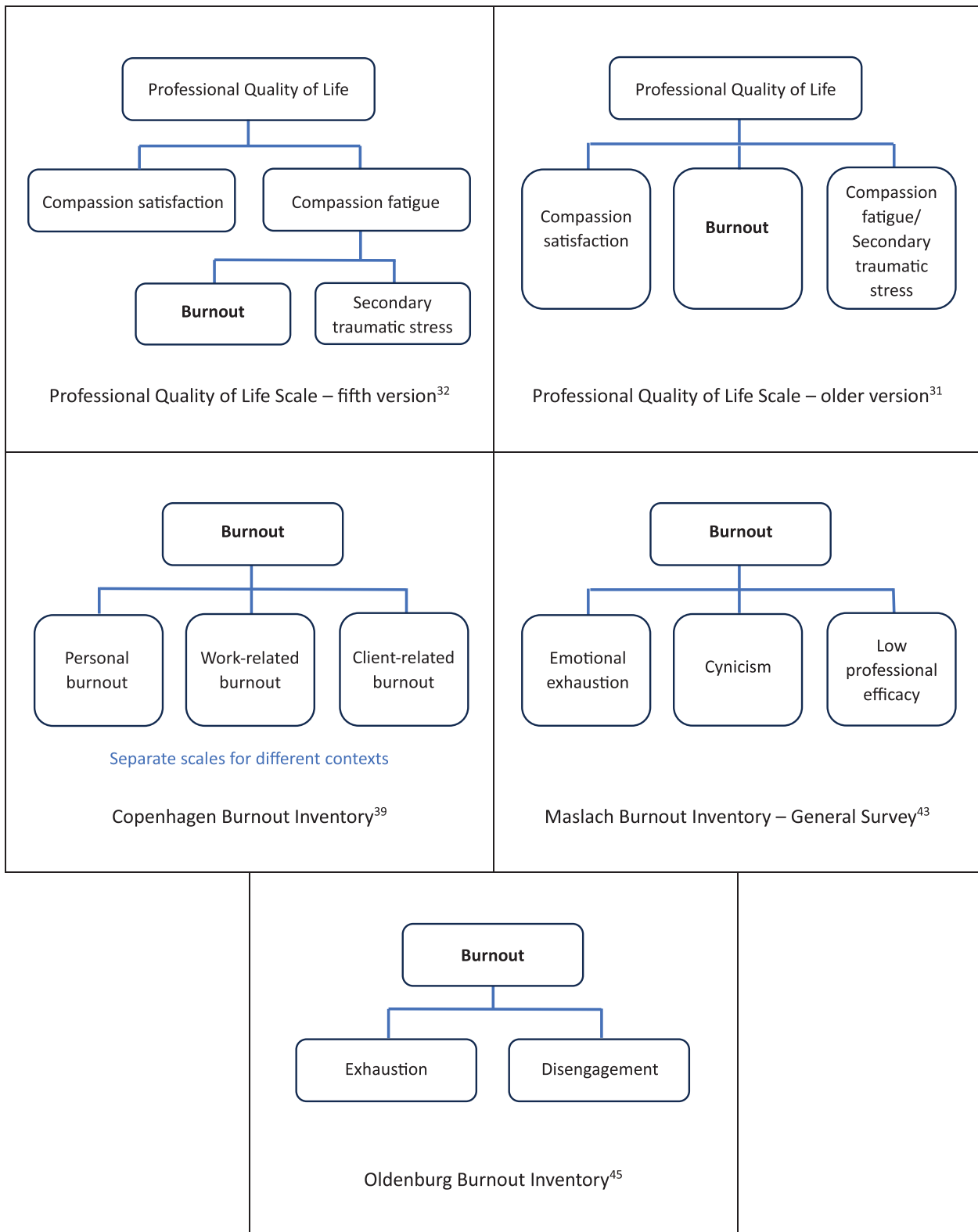
Overall, only Bedford and Anscombe-Skirrow’s<sup>22</sup> study suggested that poor mental health was common in VNs/SVNs, but this was based on open-text responses about the effects of bullying, which could not reliably identify poor mental health or capture problems unrelated to bullying. In contrast, Van Soest and Fritschi’s<sup>24</sup> study suggested that female VNs did not experience lower wellbeing than other female workers, but the comparison with a non-contemporaneous population was unreliable. Deacon and Brough<sup>23</sup> and Mair et al.<sup>26</sup> presented results from very small, specific participant samples, so their findings, while interesting, cannot be generalised.

## Burnout

Eight studies examined the specific concept of ‘burnout’ (Table S3). The World Health Organization defines this as an occupational phenomenon resulting from chronic workplace stress, characterised by three dimensions: feelings of energy depletion or exhaustion; increased mental distance from one’s job, or feelings of negativism or cynicism related to one’s job; and reduced professional efficacy.<sup>28</sup> However, there are many other conceptualisations, and a systematic review of research on ‘occupational burnout’ found 88 unique definitions across 248 studies.<sup>29</sup> The term is also often used in common parlance to describe commonplace experiences such as tiredness and loss of creativity, which is inconsistent with formal definitions.<sup>30</sup> Figure 3 summarises conceptualisations of burnout used in the reviewed studies.

Five studies, two focusing solely on VNs/SVNs, used the Professional Quality of Life Scale (ProQOL<sup>31,32</sup>). Beetham et al.<sup>33</sup> reported a mean burnout score of 28.94, indicating moderate risk, in 166 VNs surveyed during the COVID-19 pandemic. Having expected a higher score, the authors suggested that the ProQOL may have failed to capture the true levels of stress in a pandemic or that the VNs simply had good coping





**FIGURE 3** Summary of how the measuring scales used by the reviewed studies conceptualise burnout

mechanisms and resilience. Despite almost identical results (mean score of 28.84 in 992 VNs), Smith<sup>34</sup> concluded that as 92.8% of VNs were at moderate/high risk of burnout, working as a VN puts workers at high risk of suffering from it. This highlights the fact that ProQOL results can be interpreted in different ways.

Three studies used the ProQOL in mixed veterinary professional groups. Foote<sup>35</sup> presented data from 370 veterinary professionals, including 169 VNs, and

found similar mean burnout scores (not significance tested) for VNs, veterinary surgeons, patient care assistants and receptionists. These findings were similar to those of Beetham et al.<sup>33</sup> and Smith,<sup>34</sup> and were interpreted as showing ‘moderate levels’ of burnout. Rohlf et al.<sup>36</sup> found no significant difference between mean burnout scores for 93 VNs and 43 veterinarians. Scotney et al.<sup>37</sup> reported a mean burnout score of 24.8 for all 229 participants, and although a smaller

percentage of the 67 VNs (14.9%) than the 69 veterinarians (34.8%) fell in the high-risk burnout category, variation across groups was not significant. The authors gave two self-contradictory interpretations of their findings, observing in the abstract and results that 'low burnout was reported by 78% of participants', having combined the low and moderate scores, but stating in the discussion that VNs were an 'at-risk group for burnout', having combined the moderate and high scores.

Of the three studies using alternative scales, one focused solely on VNs. Deacon and Brough<sup>38</sup> reported that 53% of the 144 VNs who had completed the work-related subscale of the Copenhagen Burnout Inventory<sup>39</sup> had a high degree of burnout, referring to Kristensen et al.'s<sup>39</sup> criteria, although these criteria are unclear and variously interpreted elsewhere.<sup>40,41</sup> The mean score in Deacon and Brough's participants (49.48) was higher (not significance tested) than the mean score (33.0) for human healthcare professionals, including hospital doctors, nurses, midwives and social workers.<sup>39</sup> Deacon and Brough<sup>38</sup> concluded that high levels of burnout were prevalent in VNs.

Ashton-James and McNeillage<sup>42</sup> surveyed 249 veterinary professionals, including 77 VNs, from a single specialist Australian veterinary hospital during the COVID-19 pandemic. A subset of 239 respondents completed the Maslach Burnout Inventory – General Survey.<sup>43</sup> The clinical staff, who accounted for 67.1% of participants and included VNs, were significantly more emotionally exhausted than non-clinical staff, but there were no significant differences on the cynicism or professional efficacy subscales. For the VNs, only their emotional exhaustion mean score exceeded the authors' threshold for high levels. Varela and Correia<sup>44</sup> analysed data from 229 veterinarians and 96 VNs who had completed a Portuguese adaptation of the Oldenburg Burnout Inventory,<sup>45</sup> for which higher scores on the 1–5 response scale indicated a higher risk of burnout. The mean scores were identical between VNs and veterinarians for the exhaustion subscale and similar for the disengagement subscale (not significance tested).

Overall, only Deacon and Brough's<sup>38</sup> study suggested that VNs experienced high levels of burnout, although it must be noted that their participants were employed in one Australian state, and the comparative norms were from a study conducted 12 years earlier in Denmark. In studies using the ProQOL, all mean scores for VNs fell on the lower side of the moderate-risk category, but these scores were variously interpreted. Stamm<sup>32</sup> does not define the ProQOL's use of 'moderate' but does affirm that 'moderate to low' burnout is optimal, suggesting that only high scores are a cause for concern.

## Stress

Five studies examined 'stress' (Table S4). Two investigated general forms of stress, focusing solely on VNs.

Harvey and Cameron<sup>46</sup> stated that just over two-thirds of their 288 VNs had responded to what appeared to be a single, bespoke item about self-defined stress, and while 49% reported feeling stressed 'always', 'most of the time' or 'half of the time', 46% reported feeling stressed just 'some of the time' and 5% 'never'. The authors interpreted this as showing a 'high incidence of stress', despite acknowledging that participants who did not experience stress may have ignored the question and that an objective means of determining stress levels was required. Van Soest and Fritschi<sup>24</sup> reported that, in response to an open-text question about any occupational health issues not raised in the questionnaire, 'many' of their 147 VNs mentioned 'mental stress' but provided no further detail. In both studies, the term 'stress' was open to subjective interpretation by participants.

Three studies used the ProQOL to investigate secondary traumatic stress, described by Stamm<sup>32</sup> as the effects of 'work-related, secondary exposure to people who have experienced extremely or traumatically stressful events'. Symptoms may include fear, sleep difficulties, intrusive images and an inability to separate one's private life from one's life as a helper. Smith<sup>34</sup> reported a mean secondary traumatic stress score of 25.52, on the low side of the moderate category, in 992 VNs, but stated that 68.1% were at moderate/high risk of secondary traumatic stress, indicating a problematic level. Rohlf et al.<sup>36</sup> found no significant difference between mean secondary traumatic stress scores for VNs and veterinarians, which were both in the moderate-risk category. Scotney et al.<sup>37</sup> reported a mean secondary traumatic stress score of 24.6 for all participants, with no significant differences between occupational groups.

Overall, only Harvey and Cameron's<sup>46</sup> study provided some evidence of stress in VNs, but this was based on a single question in which stress was not defined and which almost one-third of participants chose not to answer. Similarly, Van Soest and Fritschi<sup>24</sup> did not define 'mental stress', and their reporting of results was ambiguous. The studies analysing secondary traumatic stress found, as with burnout, that all of the VNs' mean scores fell at the lower end of the moderate-risk category.

## Compassion fatigue

Three studies investigated 'compassion fatigue' (Table S5), characterised by Stamm<sup>32</sup> as 'the negative aspects of providing care to those who have experienced extreme or traumatic stressors'. Two of these studies<sup>33,35</sup> appeared to have used an older version of the ProQOL, which conceptualised compassion fatigue and secondary traumatic stress as synonymous and interchangeable<sup>31</sup> (Figure 3). This differs from the current (fifth) version of the ProQOL used by the three studies discussed in the above subsection,<sup>34,36,37</sup> which instructs researchers to report separate subscores for burnout and secondary traumatic stress,



as opposed to a combined compassion fatigue score.

Beetham et al.<sup>33</sup> reported a mean compassion fatigue score of 26.74 in 166 VNs, which was at the lower end of the moderate-risk category. Foote<sup>35</sup> did not report a mean score for their 169 VNs but indicated that it was between the other groups' mean scores of 24.67 and 28.00 (not significance tested), therefore mirroring Beetham et al.'s<sup>33</sup> findings. Harvey and Cameron<sup>46</sup> used a single, bespoke item about self-defined compassion fatigue to which approximately two-thirds of their 288 VNs responded, and while 33.5% reported experiencing it 'always', 'most of the time' or 'half of the time', 48.5% reported 'some of the time' and 18% reported 'never'. This was interpreted by the authors as demonstrating a 'high incidence' of compassion fatigue; however, they again acknowledged that participants who did not experience compassion fatigue may have ignored the question and that a more objective measure was required, as the term could be misunderstood or variously interpreted. Overall, there was no clear indication from any study that VNs experienced concerning levels of compassion fatigue.

## Moral distress

Two studies examined 'moral distress' (Table S6), described as distress occurring when a person is 'unable to carry out what they believe to be the right course of action because of real or perceived constraints on that action',<sup>47</sup> and considered to be prevalent among healthcare providers.<sup>48</sup> Deacon and Brough's<sup>23</sup> VN interviewees 'often' struggled with moral distress due to conflict between needing to respect clients' wishes and wanting to act in patients' best interests, and were 'fraught with emotional anguish' when euthanasia duties conflicted with personal morals. These findings were not intended to be generalised to a wider VN/SVN population. Using the Measure of Moral Distress for Healthcare Professionals,<sup>48</sup> Foote<sup>35</sup> found that VNs appeared to experience moderate levels of moral distress, while veterinary surgeons, patient care assistants and veterinary receptionists experienced low levels. This is consistent with human healthcare research suggesting that nurses' moral distress is intensified by their lower position in the staff hierarchy and their lack of power in decision making.<sup>49</sup> However, the mean moral distress score for the VNs in Foote's<sup>35</sup> study nevertheless fell on the lower side of the moderate category, and apparent differences across groups were not significance tested.

## DISCUSSION

Our first question was, 'How prevalent are mental health problems in VNs and SVNs?' While evidence from five of the 13 reviewed studies suggested that

some VNs and SVNs experienced some form of poor mental health, these findings lacked generalisability or transferability for reasons such as small participant numbers and recruitment of participants from specific groups (e.g., equine staff, those who self-identified as having occupational stress), locations (e.g., one Australian state) and contexts (e.g., the COVID-19 pandemic). These limitations, along with the shortcomings of convenience sampling and the likelihood of self-selection bias, were acknowledged in some articles.

No study set out to estimate the prevalence of poor mental health in general, so findings relevant to this review were largely based on single validated scales, individual non-validated items or open-text questions, which provided either very specific results (e.g., pertaining to one particular mental health problem) or ambiguous results (e.g., the proportion of participants mentioning 'mental health'). The only qualitative study<sup>23</sup> purposively recruited participants who self-identified as being affected by occupational stress and focused on the effects of exposure to patient death and client bereavement. Participants in all studies may have experienced mental health problems that fell outside the scope of the research and were therefore overlooked.

There was considerable inconsistency and ambiguity across studies in interpretation of findings (e.g., varying interpretations of similar ProQOL results), and even some self-contradictory interpretations. Where open-text questions or unvalidated items were used to explore issues such as mental health,<sup>22</sup> mental stress,<sup>24</sup> and stress and compassion fatigue,<sup>44</sup> it was unclear whether or not these terms were introduced and defined by the researchers; if not, such terms are open to various interpretations. Stress is a particularly ambiguous concept, as although intense or chronic forms can negatively affect people's mental health, minor, short-term forms are experienced by everyone, and can have positive effects such as improving motivation.<sup>50</sup>

Even validated scales may not fully capture participants' experiences; this was noted by Beetham et al.,<sup>33</sup> in relation to the use of the ProQOL during the COVID-19 pandemic. However, others have found the ProQOL to be questionable in regular circumstances. In a systematic meta-analysis of 27 international, peer-reviewed studies examining the ProQOL's psychometric structure, Hotchkiss and Wong<sup>51</sup> reported several factorial and internal structure issues and called for the development of 'more parsimonious, reliable and valid measures'. The ProQOL manual itself advises users that their scores may not accurately reflect their professional quality of life and that, unless persistent, high-risk burnout scores may simply indicate that they are having a bad day or need some time off. For those who fall in the high-risk secondary traumatic stress category, Stamm<sup>32</sup> states, 'While higher scores do not mean that you do have a problem, they are an indication that you may want to examine how you feel about your work and your work environment'.

Several studies did not test the significance of apparent differences when comparing VN mean values of scales with those of other populations, meaning that any conclusions drawn may be incorrect.

Our second question was, 'What types of mental health problems do VNs and/or SVNs experience?' While several studies concluded that VNs had a high risk of experiencing burnout, stress or secondary traumatic stress, compassion fatigue and/or moral distress, only one study by Deacon and Brough<sup>38</sup> provided relatively clear evidence. None of the studies focusing on specific problems included SVNs, and none examined anxiety or depression, which are considered the most common mental disorders globally.<sup>52,53</sup>

Multiple, incompatible definitions of mental health problems presented another difficulty, and there were often inconsistencies within studies. For example, Scotney et al.<sup>37</sup> characterised burnout in the introduction and discussion as incorporating the three components of emotional exhaustion, depersonalisation and low personal accomplishment, consistent with the original Maslach Burnout Inventory. However, in their study, they used the ProQOL, which conceptualises burnout as an element of compassion fatigue with no subcomponents of its own. Beetham et al.<sup>33</sup> and Foote<sup>35</sup> cited the ProQOL version 5 but presented data for compassion satisfaction, burnout and compassion fatigue separately, in line with an older version.<sup>31</sup> Beetham et al.<sup>33</sup> also referred to secondary traumatic stress as an umbrella term for compassion fatigue and burnout, a conceptualisation that did not match any versions of the ProQOL or the publication they cited,<sup>54</sup> but later suggested that the term was synonymous with compassion fatigue.<sup>31</sup> Several studies presented oversimplified descriptions of the problem(s) they set out to measure, implying that there was general acceptance of a single definition rather than numerous, heterogeneous views.

Our review excluded grey literature, such as reports, theses, conference presentations, working papers and media articles, which can provide valuable insights and reduce publication bias.<sup>55,56</sup> However, they also vary considerably in quality and rigour, can be time and resource consuming to find and evaluate, and are difficult to compare to academic journal articles due to diverse lengths and formats.<sup>55,56</sup> A preliminary search of grey literature prior to this review found very little empirical research on the mental health of VNs and SVNs, with the exception of the reports mentioned in the introduction.<sup>10,13,14</sup> We also excluded studies that did not provide appropriate descriptive statistics, or present relevant data separately for VNs and/or SVNs if the sample included other participants. While these articles may have provided interesting findings, they could not contribute to answering our research questions. Additionally, potential risk factors, including demographics, individual characteristics (e.g., self-efficacy, emotional intelligence), coping strategies and sources of support, were not reviewed. Before examining these issues, baseline estimates of the prevalence of poor mental health in VNs and SVNs

are required. Future reviews could expand our boundaries to include United States and Canadian veterinary technicians and veterinary technologists.

## CONCLUSIONS

As observed by Davidson,<sup>57,58</sup> veterinary nursing is a profession often overlooked by clients, colleagues and employers. Our review suggests that it has also been overlooked by researchers, highlighting considerable gaps in the evidence supporting our understanding of the mental health of VNs and SVNs. Future research should include the assessment of this in relation to other occupational and national populations, which would help to establish whether the VN profession is different in any way. Longitudinal studies would provide a more consistent overview and counterbalance temporary issues. Recognition of the crucial role that VNs play in interprofessional teams, and the need to protect their mental health in order to maintain effective performance, job satisfaction, career commitment and optimal clinical outcomes, should be promoted.

## AUTHOR CONTRIBUTIONS

*Conceptualisation and funding acquisition:* all authors. *Investigation and writing—original draft:* Naomi King and Jacqueline M. Cardwell. *Supervision:* Jacqueline M. Cardwell. *Writing—review and editing:* all authors.

## ACKNOWLEDGEMENTS

This study was funded by the IDEXX Foundation.

## CONFLICT OF INTEREST STATEMENT

The authors declare they have no conflicts of interest.

## DATA AVAILABILITY STATEMENT


Data sharing is not applicable as no original data were generated.

## ETHICS STATEMENT


No ethical approval was required for this study.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** King N, Lewis EG, Kinnison T, Langridge A, Civai C, May SA, et al. Mental health of veterinary nurses and student veterinary nurses: A scoping review. *Vet Rec.* 2024;e4091. <https://doi.org/10.1002/vetr.4091>