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Mental health in female veterinarians: effects of working hours and having children

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Background Personal, interpersonal and organisational factors have been suggested as possible causes of stress, anxiety and depression for veterinarians. We used established psychological scales to measure 1) levels of distress and work-related stress (anxiety and depression) and 2) the demographic and work characteristics of the female veterinarians in relation to anxiety, depression and mental health.

Methods A national cross-sectional survey of a cohort population was conducted and self-administered questionnaires were received from 1,017 female veterinarians who completed the mental health section of the survey. Using linear and logistic regression analyses, we examined demographic and work-related factors associated with overall stress measured by the General Health Questionnaire scale (GHQ) and the Affective Well-Being scale (Anxiety-Contentment Axis and Depression-Enthusiasm Axis).

Results More than one-third (37%) of the sample was suffering “minor psychological distress”, suggesting the stressful nature of veterinary practice. Women with at least one child had less anxiety and depression compared with those who had never been pregnant or were childless. Longer working hours were associated with increased anxiety and depression in female veterinarians overall and in stratified samples of women with and without children.

Conclusion Among work characteristics in veterinary practice, long working hours may have a direct effect on a veterinarian’s health in terms of anxiety, depression and mental health. The finding also indicates that women with at least one child have less anxiety and depression than women who have never been pregnant or childless women.

Keywords anxiety; depression; female veterinarians; having children; mental health; stress; working hours

Abbreviations CGHQ, Chronicity and the General Health Questionnaire; HRAV, Health Risks of Australian Veterinarians; GHQ, General Health Questionnaire; PA, Positive Affect; PANAS, Positive and Negative Affect Scale; NA, Negative Affect

Mental health (stress, anxiety and depression) is a serious public health problem.¹ Research has shown that it is not only massive disruptions to a person’s personal and social life that affect their mental health, but also minor daily events, work hassles, family problems and physical health status.¹ Psychological stress is a recognised health hazard for professionals. Research into the risk factors associated with stress exposure has been conducted in a wide range of health professions, including hospital nurses,² physicians³⁻⁵ and dentists⁶. Research on occupational stress exposure and its subsequent effects, such as burnout, are also receiving increased attention among veterinarians, particularly in female veterinarians.⁷⁻⁹ A survey conducted in 2000 of all veterinarians under 65 years of age in Finland (n = 1169)⁹ found that while veterinarians were committed to their work, they also experienced work-related stress and fatigue. Stress was reported by two-thirds of the veterinarians and was most often experienced by middle-aged female veterinarians, veterinarians working in towns and those involved in education and research. Personal, interpersonal and organisational factors have been reported to lead to stress, depression and burnout.¹⁰

Psychological and social factors, such as stress or anxieties, have been studied in relation to preterm delivery, term low birth weight, spontaneous abortion and infertility.¹¹⁻¹⁴ Work overload is a well-known and well documented stressor, but relatively few studies have examined the effect of long working hours on female health professionals. In a previous retrospective analysis of the same cohort population as this study, an association between long working hours and preterm delivery in female veterinarians was found.¹⁵ Long working hours may cause stress, leading to the release of catecholamine. Catecholamine may, in turn, increase blood pressure and uterine contractility and decrease placental function.¹⁶

Women in veterinary practice are now a substantial and growing proportion of the veterinarian work force in Australia. The percentage of females in the profession had increased from 15% in 1981 to 30% in 1991, 39% in 2001 and 46% in 2006.¹⁷ Females constituted 83% of the increase in total numbers between 2001 and 2006 reflecting the predominance of females among recently-graduating veterinarians.¹⁷ The feminisation of veterinary medicine has also been reported in Canada and the United States of America, where women constitute approximately 80% of the veterinary college student population.¹⁸

Many of these women are now, or are to be in their childbearing years, so special attention should be paid to the female population. There have been few surveys investigating mental health measured as stress, anxiety and depression in the veterinarian profession in Australia and none among female veterinarians. To the authors' knowledge, the potential impact of extra work load and having children on the mental health of female veterinarians has not been examined.

A survey of disease and injury in Western Australian veterinarians confirmed that drug abuse use occurs in veterinarians, with addiction and death being reported.¹⁹ Long working hours, heavy responsibility, intra-professional rivalry and inability to make decisions have been suggested as factors that may lead to stress and depression for veterinarians and its subsequent behavioural effects.¹⁹ A recent Australian study estimated that the rate of suicide in veterinarians in Western Australia and Victoria was three to four times the rate of the general population and called for investigation into the factors contributing to this high rate.²⁰ In a previous analysis from this study, we found that poor psychological health was quite common among veterinarians and that females tended to score worse on the mental health measures than males.²¹ To explore this further, we used data from the Health Risks of Australian Veterinarians (HRAV), a national questionnaire-based survey of 5748 veterinarians who graduated from Australian veterinary schools between 1960 to 2000.²² The aim of the survey was to investigate occupational hazards and selected health risks, including mental health, in veterinarians. The objectives of this paper are to 1) investigate overall mental health in female veterinarians, as measured by the General Health Questionnaire (GHQ) scale, work related stress as measured by the Affective Well-Being Scale (Anxiety-Contentment Axis and Depression-Enthusiasm Axis) and to compare the results with the general female population and other health professionals; 2) evaluate demographic and work characteristics in relation to anxiety, depression and mental health; and 3) determine if there was a difference in terms of working hours between women with and without children and how such work schedules affect psychological distress and well-being in both groups.

Material and methods

Research design and sample

This study was a national cross-sectional survey of a cohort of female veterinarians who participated in the HRAV study. The HRAV study was conducted in 2002 and the design and methods of that study have been more fully described previously, as have basic characteristics of the population.^{15, 22-24} An introductory letter, consent form and a self-administered questionnaire were sent to each veterinarian (male and female) who could be contacted (n = 5748). A reminder postcard was sent to the non-respondents. Of 2028 eligible female veterinarians who were sent the questionnaires, 1197 replied (59%) and of those 1017 completed the psychological scales, representing an overall response rate of 50%. The study was approved by the Human Research Ethics Committee of the University of Western Australia.

Psychological measures

Established psychological scales were used to measure levels of distress, anxiety and depression in veterinarians, and compare these levels between different veterinary subgroups and other professional groups. The 12-item GHQ was used to measure general mental health. It is a self-reported screening instrument for minor psychiatric disorders occurring over the past few weeks.²⁵ The Chronicity and the General Health Questionnaire (CGHQ), which is a revised scoring method for the GHQ, treats the response 'same as usual' as an indicator of chronic illness rather than of good health.²⁶

The 12-item Affective Well-Being Scale, which is a standard anxiety and depression measure, was used as the external criteria for the two GHQ scoring methods.²⁷ This scale was measured by asking the participants about how much of the time over the past few weeks their job had made them feel tense, uneasy, worried, as opposed to calm, contented or relaxed (Anxiety-Contentment Axis), or depressed, gloomy, miserable, as opposed to cheerful, enthusiastic or optimistic (Depression-Enthusiasm Axis). High scale scores reflect more positive well-being and lower scores indicated more negative well-being.

The 20-item Positive and Negative Affect Scale (PANAS) measured how often, on average, participants experienced a range of different feelings and emotions.²⁸ Briefly, positive affect (PA) reflected the extent to which a person felt enthusiastic, active and alert. Negative affect (NA) was a general measure of subjective distress and unpleasurable engagement including anger, contempt, disgust, guilt, fear or nervousness. The 11-item Social Support at Home instrument measured positive support and negative support outside work. It was a 4-point scale with the extent of agreement or disagreement. This scale was developed locally and has not previously been published. It was analysed using the same method for as the PANAS scale. This scale, along with the PANAS scale, was used as a job control variables for the effects of social support and personality type in measuring well-being (GHQ), occupational anxiety and depression in multivariate logistic and linear regression analysis.

Statistical analysis

The data were analysed descriptively in Stata-9 using frequency tabulations on each question for categorical variables and means and standard errors for continuous variables. Chi-square, pair-wise correlation and one-way ANOVA were used to calculate odds ratios and P values, which were compared to the 0.05 level of significance. An unconditional multiple logistic regression and linear regression procedure was adopted to calculate adjusted odds ratio and coefficients. The following variables were entered into the model, with the reference category mentioned first: working hours (<35, 35–45, >45), pregnancy status and number of children (never been pregnant, no children but had at least one lost pregnancy, currently pregnant, one child, two children, three children, four or more children), X-ray exposure (<5, ≥5 films per week), animal restraint (never or rarely, at least once a week), using pesticide at work (never or rarely, at least once a week), surgery (<5, ≥5 h/week), practice type (small, mixed, large), driving (<5, ≥5 h/week), years in job (<2, 2–3, 4–6, >6), age (20–29, 30–39, 40–49, ≥50) and graduation year (1961–70, 1971–80, 1981–90, 1991–2000). Final decisions for inclusion of a covariate were based on the magnitudes of regression coefficients and on theoretical considerations as to the importance of the risk factors. The associations of potential confounders with exposure variables were assessed by cross-tabulations, Chi-square tests and Mantel-Haenzel adjusted odds ratio. If the difference between the crude odds ratio and the adjusted Mantel-Haenzel odds ratio was less than 10%, the covariate was not considered a confounder. After confirming the confounders, an unconditional multivariate logistic and regression model were implemented, adding each of the variables previously selected, including those that changed the odds ratio by 10% or more.

Logistic regression was performed using a score on the GHQ of greater than 2 as the defining category. Final independent variables entered into the model were pregnancy status and number of children, working hours, age, years in current job, practice type, positive support, negative support, positive affect and negative affect. The model was repeated using a score on the CGHQ of greater than 4 as the outcome. Linear regression was performed using the scores on the anxiety and depression scales as dependent variables and the same independent variables mentioned above.

Cronbach's alpha and psychological measures

Cronbach's alpha was used to measure the internal consistency of psychological scores, when data have a multi-dimensional structure, Cronbach's alpha will usually be low. The higher the number, the higher the internal consistency of the test. Cronbach's alpha was above 0.85 for the mental health (well-being scale; GHQ), the feeling about work (anxiety and depression) scale and PANAS. The Cronbach's alpha for positive support was 0.83 (six items in the scale) and for negative support it was 0.55 (five items in the scale). The low Cronbach's alpha in the negative support scale may have been due to the lesser number of items in the scale. This scale was only used as a control variable in the analysis.

Results

Demographic and professional characteristics

There were 1017 female respondents who completed the mental health section of the HRAV survey with a mean age of 35.1 years in 2002 ($SE \pm 0.2$). The demographic and professional characteristics of participants are summarised in Table 1. In this study, 28% of respondents worked over 45 h/week and another 41% worked between 35 and 45 h.

Psychological measures

Almost one-third of the female subjects scored above 2 on the GHQ (37%), meaning they were suffering from minor psychological distress. Sixty-three percent of the veterinarians scored above a threshold value of 4 on the CGHQ (Table 2). The mean score on the anxiety-contentment axis was 3.72 ($SD \pm 0.8$) with a minimum of 1.2 and a maximum of 5.8. The mean score on the depression-enthusiasm axis was 4.31 (± 0.82) with a minimum of 1.7 and a maximum of 6.0. The mean score for positive and negative scales were 33.5 (± 6.25) for the positive affect and 18.7 (± 6.12) for the negative affect (Not shown in the Table).

The relationship between psychometric measures and demographic characteristics

Analysis of variance indicated that there was a significant difference between all psychometric measures and age, graduation year and pregnancy status, including number of children (Table 2). Younger women, recent graduates and childless women reported higher levels of stress and anxiety than older women, earlier graduates and women who had children (Table 2). The results for age and graduation are not shown. Perceived stress as measured by all psychological scores was inversely associated with an increasing number of children and, within those with children, having four or more children was associated with the least perceived stress (Table 2). Women who had at least one lost pregnancy were more stressed and had more anxiety than other groups of women (Table 2).

The relationship between psychometric measures with professional and work characteristics

There were little differences in all psychological scores of those working in any clinical or non-clinical jobs and the years working in that job. In a one-way analysis of variance, those working more than 6 years in the one job had significantly less anxiety (mean 3.9; $P = 0.01$) than those working fewer years on the job (mean 3.7). In a one-way analysis of variance and in a multivariate analysis adjusting for confounding factors, there were no significant differences in stress levels for those doing various tasks of surgery, X-ray, restraining animals during X-ray, using pesticides or driving.

Analysis of stress measured by GHQ correlates indicated that the number of hours worked was associated with perceived job stress by veterinarians (pair-wise correlation = 0.11, $P < 0.0008$). The association between stress and job hours (by contingency table analysis) showed a dose-

response relationship and was statistically significant. Job hours per week was a strong predictor for perceived stress in our sample, with veterinarians working more than 45h/week scoring worse on all measures of strain and stress compared with those who worked less than 35 h/week (Table 2).

Multivariate linear and logistic regression models

After adjusting for age, working hours per week, years in job, practice type, positive and negative affect, positive and negative support, women with two or more children had significantly less anxiety and depression than those who had never been pregnant (Table 3). Adding the variables in regard to X-rays, restraint of animals, surgery, and pesticides did not change the results significantly, so were omitted from the models. There were no statistically significant differences in the GHQ scores by number of children, although women with two, three or four or more children were less psychologically distressed than veterinarians who had never been pregnant. Women who worked full time (35–45 h/week) or worked more than 45 h/week had more anxiety and depression than those who worked part-time. Full-time veterinarians also had higher level of GHQ scores than part-time practitioners, but the differences were not significant.

Psychometric measures by working hours within childless and non-childless subgroups

Two separate sets of multiple linear and multiple logistic regressions were done, one restricted to veterinarians with children and the other to veterinarians without children. Anxiety and depression was associated with increasing working hours per week in both groups of veterinarians, with or without children, after adjustment for age, working hours per week, years in job, practice type, number of children, positive and negative affect, and positive and negative support. The association was particularly strong in those working more than 45 h/week (Table 4). There were no statistically significant differences in perceived stress measured by the GHQ and CGHQ by working hours for veterinarians with or without children. However, the result from the binary GHQ indicated that women with at least one child who worked full-time (35–45 h/week) had higher stress compared with women who worked part-time (<35 h/week). Analysis of the GHQ scores in women without children indicated that lower stress occurred in women who worked full-time (35–45 h/week), and higher stress in women who worked more than 45 h/week, compared with women who worked part-time (<35 h/week).

Discussion

Demographic and work-related psychological well-being among female veterinarians has rarely been addressed although it is anecdotally a problem in the profession. This paper looks particularly at female veterinarians investigating overall mental health and its association with demographic and work characteristics. The results of our survey demonstrated that more than one-third (37%) of the sample was suffering ‘minor psychological distress’. When chronicity of the stress was considered, the proportion of female veterinarians suffering psychological distress increased to 63%. This is consistent with occupational stress rates in other similar professions

and higher than observed in the general population, which has been reported at 17.8%.^{29, 30}

Results on the GHQ from other recent surveys in both males and females indicated that levels of minor psychiatric symptoms were also high in UK dentists (32%),⁶ Australian general practitioners (30.7%)⁵ and young UK doctors (30%)³.

The results from other standard testing for psychological stress such as the Affective Well-Being Scale demonstrated that the female veterinarians in this study reported more anxiety and depression (lower scores) compared with respondents of the same level of professional standing but different occupation and gender.²⁷ The item mean score of 3.72 for anxiety was lower than the scores reported for both genders in the same occupational level scores (mean 3.96) and females (mean 4.22), as was the mean score of 4.31 for depression (mean 4.61 and 4.62 respectively).²⁷ The results from GHQ and Affective Well-Being scales show that young, recent graduates and veterinarians working more than 45 h/week have higher levels of stress, anxiety and depression. This also agrees with the results of a study from Texas, which reported that veterinarians who graduated from veterinary school prior to 1970 experienced a higher degree of enjoyment from their practice than those who graduated in the 1970s or 1980s.³¹ This might be explained by differences in economic situation, working hours, onerous responsibilities, increasing confidence with more experience in the profession or selection bias, with those who do not enjoy veterinary science moving out of the profession. An alternative explanation for why younger veterinarians had different results could be a cohort effect. However, a large Australian longitudinal study on women's health (ALSWH) which began in 1996 with representative sample of 40,000 Australian women in three age groups of 18–23, 45–50, and 70–75 is collecting data on a range of health issues, including physical and emotional health. They used several standard self-report measures of mental health, including depression, anxiety and stress, and reported poor mental health was more prevalent among young and single women.³² This study reported that contrary to negative stereotypes of ageing, older women generally scored highly on measures of positive mental health, despite major life challenges, such as widowhood.

A survey of Finnish veterinarians,⁹ measured stress and work-related burnout using the Maslach Burnout Inventory, found similar results to those reported here. Stress was reported by two-thirds of the veterinarians in that survey and was more prevalent among middle-aged female veterinarians. Work was often reported as the most significant cause of stress, with specific problems including being pressed for time, having too much work to do and not having a clear overview of the work itself. On-call shifts, administrative duties, and uncertainty of the continuity of the work contract were also evident as factors causing stress. The careful planning of work, a sensible distribution of the duties at the workplace and levelling out the work peaks were suggested as ways of reducing the stress of veterinary work. Another study of burnout among female veterinarians in the United States used Pines and Maslach's self-diagnosis scale and reported that two-thirds of the sample scored high on the burnout scale.⁷ This survey also reported higher burnout scores in employed female veterinarians who worked over 40 h/week, felt their jobs were stressful and women who were not involved in ownership of the practice. This

survey reported the high correlation of burnout scores with 87% of the respondents feeling their job was stressful, suggesting that this scale measured work-related factors and the possibility of burnout from occupational stress. An Australian study reported that veterinary students can experience stress in balancing the different demands on them, (academic, interpersonal and professional or work-related) as well as managing potential conflict between animal and human interests.³³

A qualitative analysis of open responses to a question in the survey suggested that work demands, family responsibilities, staff supervision, financial operations, public relations, interpersonal factors and lack of support were reported to increase the level of stress associated with work. Other sources of reported stress in veterinarians were: physical stresses such as lifting and restraining animals; driving about 50–60 thousand kilometers per year; motor vehicle accidents; long working hours and shift work, resulting in lack of time for family, exercise, healthy dietary habits and social life. These factors have a significant impact on worker's health and the work environment. The original data used in our study were collected a decade ago and some veterinary training programs may have since included references to these issues in their curricula. These results support the inclusion and even the extension of relevant curriculum content to prevent poor mental health outcomes in veterinarians, not only during training but also in continuing professional development programs.

Having children and mental health

The findings of the effects of work and having children on health were unexpected. The presence of children for women added no additional explanatory power to explain the stress levels and this suggests that work-family conflicts may not be a major source of stress for female veterinarians. The finding also indicates that women with two or more children have less anxiety and depression than women who have never been pregnant or childless women. This finding is supported by newer feminist theories that suggest that multiple roles mitigate strain and that women who occupy several roles are healthier and happier than those with few.³⁴ Research using new approaches has shown that there are benefits to combining roles of work and parental roles, but that social support from the spouse is crucial. A recent survey on career satisfaction in US women physicians corroborates this assertion.³⁵ Female physicians with three children were happier, more stable in their specialties, and more likely to re-enter the work force than their colleagues with no children or only one child. A study of self-reported depression and suicide attempts among US women physicians reported depression was more common among those who were not partnered and were childless.⁴ Another survey found that the odds of burnout were 40% lower in women with young children when support from colleagues, a spouse or significant other for balancing work and home issues was present.³⁶ There is limited research looking at having children, work and mental health of women in general population. The Australian Longitudinal Study on Women's Mental Health reported that major life transitions that are regarded as normative and positive in young women, such as starting work, marrying and becoming a

mother, are associated with decreased stress despite the large amount of life change and adjustment involved.

However, there may be limitations to this generalisation as it obscures important health differentials related to types of roles occupied and attributes of those roles. In addition, we do not have information about physical health from this survey. Further research is needed to identify the effects of multiple roles and women's mental and physical health.

Previous studies suggest that characteristics associated with marriage have beneficial effects on health, at least in part, because marriage provides greater financial resources and social support and married women experience less psychological distress and have better health-related behaviour.^{37, 38} We do not have information about the marriage status of the women in this survey, but if we speculate that most women with children in this survey had a partner, then this result contributes to a growing body of prospective evidence to indicate that, in general, being married or characteristics associated with being married, contribute to better health than being unmarried.

Working hours and mental health

The analysis of these cross-sectional data also supports another hypothesis to the effect that differences in work hours affect the perception of psychological distress and well-being.

Work overload is a well-known and well documented stressor. After adjusting for number of children, age, years in the job, type of practice, social support at home and positive and negative affect, those who worked more than 45 h/week had increased anxiety and depression. The results were also significant in the stratified samples of non-childless and childless veterinarians. Analysis of the GHQ data showed a similar trend, but the results were not statistically significant. This was a cross-sectional study, and the direction of causation is unclear, but our findings possibly support previous evidence concerning the beneficial effects of reduced work hours per week on mental health.^{36, 39, 40} However, it may not be the number of hours per se that has the detrimental effect, rather the extent to which work hours and job demands were seen as satisfactory by incumbents seems to be important.⁴¹ A survey of characteristics and outcomes for female physicians concluded that those who work their preferred number of hours, regardless of full-time or reduced-hours status, reported better job quality, schedule fit, lower burnout, better marital role quality and higher life satisfaction.⁴²

When we stratified the sample into non-childless and childless veterinarians, 54% of women with at least one child, and who were currently working in veterinary practice, reported part-time work (<35 h/week) versus 18% of childless women. It is also possible that many women in this survey, particularly those with children, chose part-time work in order to combine career and family duties. This choice may lead to different career paths for female veterinarians. By recognising these different career paths, it may be possible for agencies that employ veterinarians, to benefit from the unique contributions that part-time female veterinarians can make.

Strengths and limitations

The strength of the study was that the data set was large and included female veterinarians of all ages in Australia. In addition, the findings with respect to the relationship between having children and working hours with perceived stress were consistent with other studies, thus lending support to the results. This is the first study to examine such issues in detail and their importance for personal and work-related goals.

Limitations to this study include the self-reported nature of data, and a suboptimal but not unusual response rate (59%, 50%). However a similar survey achieved a response rate of 67%.⁹ Other studies of physicians conducted in the past 20 years have also reported similar response rates.⁴³⁻⁴⁵ However, we tried to reduce as many as possible of the potential biases of epidemiological studies. We included a large cohort of female veterinarians from all types of clinical practice and from all ages in Australia, suggesting that our study was generally representative of female veterinarians. In addition, we performed an analysis to identify the main reasons for non-participation from 195 veterinarians who acknowledged the receipt of questionnaires but refused to participate. The reasons included working for a postgraduate qualification, being outside the profession for a long time and working temporarily overseas, suggesting that those not in clinical practice or veterinary work were less likely to participate. Non-participants were also more likely to be older graduates than respondents. So the effect of selection bias due to response rate is likely to have been minimal. Another limitation of this study was that the data were limited by the range of variables that were available. Veterinarian demographic characteristics such as marital status, domestic working hours, spouse educational level and income have been shown to correlate with stress. We also did not have information about interpersonal problems such as relationship with supervisor or colleagues in this survey.

Conclusion

These findings point to the stressful nature of veterinary practice and the effects of personal and working conditions on a veterinarian's well-being. Women with at least one child had less anxiety and depression compared with those who had never been pregnant or were childless. This study examined several work characteristics including doing various tasks of surgery, X-ray, restraining animals during X-ray, using pesticides, working hours or driving in relation to mental health, but the only work characteristics which appears to have a direct effect on a veterinarians' health in terms of stress, anxiety and depression was the measure of hours worked per week. Longer working hours were associated with increased anxiety and depression in female veterinarians overall and in stratified samples of women with and without children. The next step should be to investigate the effect of other personal, interpersonal and organisational factors and to develop interventions to help veterinarians to reduce their level of stress, anxiety and depression, particularly in young female veterinarians.

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Table 1. Demographic and professional characteristics of 1017 female participants

Characteristics	Number ^a	Percentage
Age ^b		
20–29	321	31.6
30–39	437	42.9
40–49	209	20.6
≥50	50	4.9
Decade of graduation		
1960–1969	18	1.8
1970–1979	112	11.0
1980–1989	333	32.7
1990–2000	554	54.5
Age at graduation		
21–22	407	40.1
23–24	442	43.6
25–29	120	11.8
30–39	39	3.9
≥40	6	0.6
Smoking behaviour		
Never-smoker	823	81.2
Current smoker	59	5.8
Ever-smoker	132	13.0
Number of pregnancies		
0	572	56.2
1	113	11.1
2	139	13.7
3	97	9.5
≥4	75	7.4
Currently pregnant	21	2.1
Number of children		
0	627	61.6
1	111	10.9
2	165	16.2
3	85	8.4
≥4	29	2.8
Time in current job (years)		
<2	309	30.5
2–3	306	30.2
4–6	187	18.5
>6	211	20.8
Job type		
Clinical	904	89.2
Government	37	3.6
Academic	25	2.5

Drug company	12	1.2
Other	35	3.5
Practice type		
Large	98	9.7
Small	629	62.5
Mixed	260	25.8
Non-animal	19	1.9

^aNumber of missing is not included.

^bAt the time of the survey in 2002.

Table 2. Psychological scores for female veterinarians by pregnancy status, number of children and working hours

			GHQ >2 (%)	CGHQ >4 (%)	Mean anxiety/ Contentment score (SD) ^b	Mean depression/en thusiasm score (SD) ^b		
N			1017	1017	1001	1004		
Total mean (CI) or percentage			37.3	62.8	3.7 (0.8)	4.3 (0.8)		
Pregnancy status and number of children								
Never-pregnant			40.6	65.4	3.6 (0.8)	4.2 (0.8)		
No child, at least 1 pregnancy			47.1	64.7	3.6 (0.8)	4.3 (0.8)		
Currently pregnant			28.6	57.1	3.6 (0.9)	3.9 (0.8)		
1 child			38.7	56.8	3.9 (0.7)	4.4 (0.7)		
2 children			29.7	60.0	3.9 (0.8)	4.5 (0.7)		
3 children			31.8	65.9	3.8 (0.8)	4.4 (0.8)		
>4 children			20.7	44.8	4.2 (0.9)	4.7 (0.8)		
P value			<0.037	<0.196	<0.001	<0.001		
Working hours per week								
<35			31.6	60.1	3.9 (0.8)	4.5 (0.8)		
34–45			38.3	64.5	3.7 (0.8)	4.3 (0.7)		
>45			41.9	63.5	3.5 (0.9)	4.2 (0.9)		
P value			<0.035	<0.482	<0.001	<0.001		

^a Lower score donate better health

^b Higher score donate better health

CI, confidence interval; SD, standard deviation

Table 3. Linear regression and logistic regression with 95% confidence intervals (CI) for anxiety, depression and well-being scale (GHQ) by pregnancy status, number of children and working hours

	Anxiety/contentment ^a adjusted coefficient ^b (95% CI)	P value	Depression/enthusiasm ^a adjusted coefficient ^b (95% CI)	P value	GHQ >2 adjusted odds ratio ^b (95% CI)	CGHQ >4 adjusted odds ratio ^b (95% CI)
Pregnancy status and number of children						
Never-pregnant	0.0		0.0		1.0	1.0
No child, at least 1 pregnancy	0.08 (−0.16–0.32)	<0.515	0.13 (−0.06–0.34)	<0.192	1.37 (0.59–3.19)	1.00 (0.39–2.53)
Currently pregnant	0.09 (−0.20–0.39)	<0.532	−0.10 (−0.35 –0.15)	<0.425	0.54 (0.17–1.69)	0.54 (0.17–1.67)
1 child	0.15 (0.00–0.31)	<0.049	0.11 (−0.02–0.24)	<0.100	1.50 (0.87–2.57)	0.77 (0.43–1.37)
2 children	0.19 (0.04–0.34)	<0.013	0.14 (0.01–0.27)	<0.028	0.86 (0.50–1.49)	0.98 (0.54–1.75)
3 children	0.16 (−0.01–0.35)	<0.080 ^c	0.20 (0.05–0.36)	<0.010	0.90 (0.45–1.80)	1.45 (0.70–2.99)
≥4 children	0.40 (0.11–0.69)	<0.007	0.37 (0.12–0.62)	<0.003	0.43 (0.11–1.60)	0.52 (0.16–1.64)
Working hours per week						
<35	0.0		0.0		1.0	1.0
34–45	−0.10 (−0.22–0.01)	<0.096 ^c	−0.13 (−0.23—0.03)	<0.011	1.15 (0.74–1.78)	1.20 (0.75–1.92)
>45	−0.29 (−0.40—0.13)	<0.001	−0.25 (−0.37—0.13)	<0.001	1.57 (0.97–2.55) ^c	0.97 (0.57–1.64)

^aHigher score donates better health

^bAdjusted for age, working hours per week, years in job, practice type, social support at home, positive affect and negative affect (PANAS scale)

^cSignificant at 90% CI

Table 4. Linear regression and and logistic regression with 95% confidence intervals (CI) for anxiety, depression and well-being scale (GHQ) by working hours within childless and non-childless subgroups

Working hours per week	Anxiety/contentment ^a adjusted coefficient ^b (95% CI)	P value	Depression/enthusiasm ^a adjusted coefficient ^b (95% CI)	P value	GHQ >2 adjusted odds ratio ^b (95% CI)	CGHQ >4 adjusted odds ratio ^b (95% CI)
Veterinarians with at least one child*						
<35	0.0		0.0		1.0	1.0
34–45	−0.07 (−0.24–0.10)	<0.423	−0.13 (−0.27–0.00)	<0.067 ^c	1.43 (0.75–2.75)	0.99 (0.50–1.96)
>45	−0.29 (−0.50–0.07)	<0.009	−0.31 (−0.50–0.13)	<0.001	1.78 (0.80–3.98)	1.14 (0.49–2.64)
Veterinarians with no children*						
<35	0.0		0.0		1.0	1.0
34–45	−0.10 (−0.28–0.08)	<0.295	−0.08 (−0.24–0.07)	<0.275	0.85 (0.43–1.56)	1.22 (0.59–2.54)
>45	−0.28 (−0.48–0.08)	<0.005	−0.20 (−0.37–0.03)	<0.017	1.22 (0.62–2.40)	0.95 (0.43–2.09)

^aHigher score denotes better health

^bAdjusted for age, working hours per week, years in job, practice type, social support at home, positive affect and negative affect (PANAS scale)

^cSignificant at 90% CI

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