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Well-being in Australian chiropractors and chiropractic students: factors influencing burnout and job satisfaction

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Background: *Chiropractors face workplace stressors that affect well-being, burnout and job satisfaction. The well-being of chiropractors and students in Australia is yet to be examined.*

Methods: *From September 2024 to January 2025, Australian chiropractors and students completed a well-being survey. Measures included burnout, anxiety, depression, job satisfaction, substance use, suicidal ideation and job demands/resources. Multivariable regression models assessed factors associated with burnout and job satisfaction.*

Le bien-être des chiropraticiens australiens et des étudiants en chiropratique : les facteurs influençant l'épuisement professionnel et la satisfaction au travail

Contexte: *Les chiropraticiens font face à des facteurs de stress au travail qui affectent leur bien-être, leur épuisement professionnel et leur satisfaction au travail. Le bien-être des chiropraticiens et des étudiants en Australie n'a pas encore été examiné.*

Méthodes: *De septembre 2024 à janvier 2025, des chiropraticiens et des étudiants australiens ont complété une enquête sur le bien-être. Les mesures comprenaient l'épuisement professionnel, l'anxiété, la dépression, la satisfaction au travail, l'utilisation de substances, les idées suicidaires et les exigences/ressources liées au travail. Des modèles de régression multivariée ont évalué les facteurs associés à l'épuisement professionnel et à la satisfaction au travail.*

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Results: *Of 200 respondents, 38% reported burnout and nearly 80% reported job satisfaction. Early-career chiropractors reported lower job satisfaction and higher burnout. Higher depression (β=0.26 [0.15-0.36]) and anxiety (β=0.03 [0.00-0.06]) scores were associated with burnout. Job satisfaction was associated with lower depression (OR=.60 [0.39-0.93]), more resources (OR=2.98 [1.39-6.39]) and greater workload control (OR=2.03 [1.14-3.62]).*

Conclusion: *Preliminary results suggest the need for well-being screening and interventions for at-risk groups, including students, early career chiropractors and those experiencing elevated anxiety and depression.*

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KEY WORDS: anxiety, burnout, chiropractic student, chiropractor, depression, job resources and demands, job satisfaction, well-being

Résultats: *Parmi 200 répondants, 38 % ont signalé un épuisement professionnel et près de 80 % ont déclaré être satisfaits au travail. Les chiropraticiens en début de carrière ont signalé une satisfaction au travail plus faible et un épuisement professionnel plus élevé. Des scores de dépression plus élevés (β=0,26 [0,15-0,36]) et d'anxiété (β=0,03 [0,00-0,06]) étaient associés à l'épuisement professionnel. La satisfaction au travail était associée à une dépression plus faible (OR=0,60 [0,39-0,93]), à plus de ressources (OR=2,98 [1,39-6,39]) et à un meilleur contrôle de la charge de travail (OR=2,03 [1,14-3,62]).*

Conclusion: *Les résultats préliminaires suggèrent la nécessité de dépistage du bien-être et d'interventions pour les groupes à risque, notamment les étudiants, les chiropraticiens en début de carrière et ceux éprouvant une anxiété et une dépression élevées.*

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MOTS CLÉS : anxieté, épuisement professionnel, étudiant en chiropratique, chiropraticien, dépression, ressources et exigences professionnelles, satisfaction au travail, bien-être

Introduction

The COVID-19 pandemic highlighted the importance of maintaining a healthy and functioning healthcare workforce to withstand pressures in an ever-changing environment.[1] The healthcare environment places employees at a high risk for stress, burnout, and psychological distress, with the challenges of sustained clinical work, constantly changing work environments and repeated exposure to patients' issues.[1–3] Chiropractors, like other healthcare professionals, address complex client issues and offer physical and emotional support to their patients.

The Australian chiropractic profession has a registered workforce of over 6,000 accounting for an estimated 21.3 million patient consultations per year.[4,5] Although research on chiropractors' well-being is in its infancy, U.S. studies have identified isolation, professional competition and student debt as stressors that can impact chiropractors' well-being.[6,7] Additionally, individual factors such as fewer years in practice, younger age, and female gender have been linked to reduced chiropractor well-being.[6]

Workplace well-being is commonly operationalised using measures of burnout, job satisfaction, and psychological functioning (e.g. depression and anxiety levels).[8] Burnout is considered a psychological syndrome due to a prolonged state of chronic job-related stress.[9,10] It is estimated that burnout may develop in 20 to 80% of healthcare workers, and it is reported across all stages of their careers.[3,11] Burnout in healthcare workers impacts the individual and their patients, with higher levels of burnout associated with increased medical errors and lower patient outcomes.[3] Literature on burnout in chiropractors is scarce, with no published papers researching Australian chiropractors and burnout, reiterating the importance of this research.

Complementary to burnout is the concept of job satisfaction. Since work consumes a significant portion of a person's time, job satisfaction has a profound impact on psychological functioning, health, and overall well-being.[12,13] Additionally, reduced job satisfaction is associated with a decline in the quality of patient care, decreased

worker productivity, increased employee absenteeism, and a greater intention to leave the profession or retire early.[14,15] Job satisfaction is an individual's affective response to various aspects of their job that are important to them, and low job satisfaction is associated with higher symptoms of burnout, anxiety and depression.[12] Considering the link between poor job satisfaction and burnout, as well as its implications for patients and the broader healthcare system, it is imperative to investigate job satisfaction among Australian chiropractors.

An individual's risk of developing burnout is not solely determined by workplace conditions. Responses to stressful situations vary across individuals, with reduced psychological functioning increasing an individual's vulnerability to stressors.[16] Anxiety and depression, common psychological conditions, are extensively connected with burnout in the literature.[16,17]

Like healthcare workers, students in health professions face significant stressors, particularly during teaching terms and placements, which add to academic and financial strain.[10] For example, medical students face well-documented challenges with stress, burnout and psychological distress, with factors such as academic studies, relationships and financial difficulties impacting their well-being.[17,18] Research on chiropractic student well-being is limited; however, a survey of 121 chiropractic students across four European colleges reported burnout and stress levels similar to those of medical students.[19] These findings underscore the importance of including students in this study, as addressing their well-being is essential for the sustainability of Australia's chiropractic workforce.

Burnout and job satisfaction are essential components of well-being that have been extensively studied in other healthcare professions; however, there has been limited investigation in the Australian chiropractic context. In alignment with a global effort to understand the mental health and well-being of the chiropractic workforce using an internationally comparable survey, the current study piloted the implementation of the National Chiropractic Health Survey. The specific aims of this pilot study are to: (1) determine preliminary estimates of Australian chiropractors and chiropractic students, burnout, job satisfaction, socio-demographic factors, psychological functioning and drug and alcohol use, and (2) determine the preliminary association between a) burnout and b) job satisfaction with sociodemographic, psychological and job resources and demands in the Australian chiropractic profession.

Methods

Procedure

This pilot study encompassed a cross-sectional online survey conducted between September 2024 and January 2025. All registered Australian chiropractors and chiropractic students aged 18 and above were eligible to participate in a survey exploring factors related to work and wellbeing via an online link. National Chiropractic Associations, existing networks, and professional associations distributed the survey to Australian chiropractic members. It was also distributed to members on their websites and other communication channels (e.g., newsletters and social media). The study was approved by the CQUniversity Human Research Ethics Committee, approval number 0000025018.

Measures

The National Chiropractic Health Survey (NCHS), initially developed for the Canadian Medical Association and successfully applied to Canadian chiropractors in 2023, was adapted for an Australian setting.[20] The survey captured demographic information and psychological, behavioural, and occupational indicators relevant to the Australian chiropractic industry. This survey measured factors relating to burnout and job satisfaction in Australian chiropractors and students. In this survey, all questions were optional, with the only required answers being those that involved navigation (e.g. would you like to skip this section?). For the present study, career stage choices were collapsed into two categories: chiropractic students (including chiropractic students, graduate school students, and clinical residents) and registered chiropractors (currently practising chiropractic, on leave from practice, paused practice, but not retired).

Burnout

Burnout was measured using the Stanford Professional Fulfilment Index (PFI), which consists of 16 questions rated on a 5-point rating scale (0- Not at all true; 4- completely true) with three subscales. The PFI burnout score is calculated by averaging the individual item scores within the work exhaustion (WE) and interpersonal disengagement (ID) sub-scales. The WE subscale (4 items) meas-

ured feelings of physical and emotional exhaustion with questions such as 'How often during the past few weeks have you felt emotionally exhausted at work or school?' The ID subscale (6 items) assessed detachment and reduced empathy, with questions including 'How often during the past few weeks have you felt less empathetic with your patients?' Following standard guidelines, mean scores were calculated for each subscale to produce total WE and ID scores. A total burnout score was calculated as the mean of all 10 items. A cutoff level of 1.33 was used to establish PFI burnout. The reliability of the PFI has been established with test-retest reliability estimates of 0.80 for work exhaustion ($\alpha = 0.86$), 0.71 for interpersonal disengagement ($\alpha = 0.92$), and 0.80 for overall burnout ($\alpha = 0.92$). PFI measures have been shown to correlate highly with the Maslach Burnout Inventory (MBI), the closest equivalent burnout measurement tool ($r \geq 0.50$) [21]. In the current study, Cronbach's alpha for internal consistency was $\alpha = 0.93$ for WE, $\alpha = 0.93$ for ID, and $\alpha = 0.94$ for overall burnout.

Job Satisfaction

Job satisfaction was measured by one item: 'Overall, I am satisfied with my current job or training position,' rated on a 5-point Likert scale from 0 (strongly disagree) to 4 (strongly agree). Given that most chiropractors and students reported satisfaction (agree or strongly agree), job satisfaction was coded as a binary variable (1 = satisfied, 0 = neutral/disagreed), allowing for meaningful analysis of the skewed distribution toward higher satisfaction. Single-item measures of job satisfaction are widely used to capture an individual's overall satisfaction with their job, avoiding the complexity of multi-component scales that may not reflect an individual's priorities.[12,22,23] A single-item measure of job satisfaction shows concurrent validity with multiple-item job satisfaction scales ($r = .82$) and a reliability estimate of .90 (comparable to multiple-item job satisfaction measures of $\alpha = .92$).[22]

Anxiety

Anxiety symptoms were measured using the 7-item General Anxiety Disorder screening tool (GAD-7). Participants were asked, 'How often have you been bothered by the following over the past two (2) weeks?' followed by seven items relating to anxiety symptoms (e.g. 'Feeling nervous, anxious, or on edge'). Four options ranged from nearly every day (score of 3) to not at all (score of 0). The results of each question were totalled (ranging from 0 to 21), with higher scores indicating higher anxiety symptoms. Internal consistency of the GAD-7 in the general population is acceptable ($\alpha = 0.89$).[24] The GAD-7 demonstrates construct validity, with intercorrelations comparable to those found in other studies, including the PHQ-2 ($r = 0.64$) and the Rosenberg Self-Esteem Scale ($r = -0.43$).[24] Cronbach's alpha for internal consistency was $\alpha = 0.91$.

Depression

Depression symptoms were measured using the Patient Health Questionnaire -2 (PHQ-2). Participants were asked, 'Over the last 2 weeks, how often have you been bothered by the following problems?' This was followed by two statements: 'little interest or pleasure in doing things', and 'feeling down, depressed, or hopeless.' Respondents chose from 4 options ranging from nearly every day (score of 3) to not at all (score of 0). The results of each question were totalled (ranging from 0 to 6), with higher scores indicating higher levels of depressive symptoms. Criterion validity has been demonstrated for the PHQ-2 by assessing it against the mental health professional (MHP).[25] The PHQ-2 has demonstrated a pooled sensitivity of 100% and 76% and a specificity of 77% and 87% in different samples and is therefore effective for identifying individuals who may be at risk for depression.[26] Cronbach's alpha for internal consistency was $\alpha = 0.84$.

Suicidal ideation

Respondents were asked a screening question about suicidal ideation: 'Have you had thoughts of suicide in the last 12 months?', choosing from 'yes', 'no', and 'prefer not to answer'. Respondents who selected 'yes' screened positively for suicidal ideation. All other responses screened 'no' for suicidal ideation. Before answering questions regarding suicidal ideation and drug and alcohol use, participants were reminded that the survey was anonymous and voluntary. Participants were encouraged to seek support from a general practitioner or emergency services. Contact numbers for two mental health helpline services were provided to participants (Beyond Blue and Lifeline).

Alcohol and Drug Use

Questions regarding the use of alcohol were asked on a 5-point Likert scale from 0 (never) to 4 (daily or almost daily) with an option of 'I prefer not to answer'. Respondents were asked: 'In the past year, how many times have you used the following substances for non medical reasons? Alcohol(for men, five or more standard drinks in a day; for women, four or more standard drinks in a day). Note: A drink is one can/bottle of beer or wine cooler, one glass of wine, one cocktail, or one shot of liquor.'

Drug Use

Questions regarding the use of drugs were asked on a 5-point Likert scale from 0 (never) to 4 (daily or almost daily) with an option of 'I prefer not to answer'. Respondents were asked: 'In the past year, how many times have you used the following substances for non-medical reasons? (stimulants, tobacco products, cannabis (recreational), opioids (unauthorised), and others).' Although medicinal cannabis is legal with a prescription in Australia, recreational use of cannabis is illegal in most Australian states and territories.

Job Demands and Resources

Respondents were asked to rate their satisfaction with efficiency and resources on a 4-point Likert scale (very dissatisfied to satisfied). Higher scores indicated higher satisfaction. To calculate hours of work, chiropractors reported the number of hours per week spent on patient care, administrative tasks, and other duties/responsibilities. Students indicated the number of hours per week they usually spend on coursework, training, education and other duties. Control over workload was measured on a 5-point Likert scale (poor to optimal), with higher scores indicating greater control over workload.

Analysis

Sample size estimates were based on the total number of chiropractors in Australia in 2024 (n = 6526) and chiropractic students (n = 1601).[27] Using an online sample size calculator, we chose a 95% confidence level, 0.5 standard deviation, and a margin error of 5%. The sample size for a fully powered survey would be 363 chiropractors and 310 chiropractic students.

Study data were collected and managed using the REDCap electronic data capture platform hosted at Central Queensland University (CQUniversity).[28,29] Data were analysed using STATAv17 (StataCorp LLC, College Station, TX). Due to the low sample size of chiropractic students, analyses were conducted using the full sample, with stratified results by career stage (chiropractor vs. chiropractic student) provided in Appendices 1 and 2.

Descriptive statistics (mean, standard deviation, frequency distributions) for all key variables (burnout, job satisfaction, anxiety, depression, suicidal ideation, demands and resources) were generated and presented by two groups (chiropractors and chiropractic students). Multiple chi-square tests were conducted to determine the association between categorical demographic variables and the dependent variables. T tests were used to determine differences between the two groups of chiropractors and students for continuous data. Analysis of Variance (ANOVA) tests were used to determine associations between continuous dependent variables.

To determine the relationship between burnout or job satisfaction with psychological and job-related demands, two separate statistical models were conducted. A single multivariable linear regression model was conducted with burnout as the dependent variable and psychological functioning, and job resources and demands as the independent variables. A separate multivariable logistic regression model was conducted with job satisfaction as the dependent variable and psychological functioning, and job resources and demands as the independent variables. Covariates nested within the additional multivariable models included age, gender, and career stage (chiropractor vs. student). Both statistical models were bootstrapped with 1,000 resamples to produce robust estimates of the standard errors and confidence intervals.

Results

Descriptive Statistics

Two hundred and four responses were recorded; four were excluded due to incomplete data. The final sample comprised 152 registered chiropractors and 48 chiropractic students, representing 2.5% of the Australian chiropractic population. Table 1 presents the demographics of the participants and a summary of study variables stratified by chiropractors and chiropractic students.

This sample of chiropractors closely reflected the Australian chiropractic profession; however, with a higher proportion of females (54.5%) compared to the AHPRA

2023-24 data (42%).[5] Students from chiropractic educational institutions participated from the states and territories of New South Wales (NSW), Queensland (QLD), Victoria (VIC), and Western Australia (WA), but no responses were received from South Australia (SA). (There are no chiropractic educational institutions currently in Tasmania (TAS), the Australian Capital Territory (ACT) and the Northern Territory (NT)). One chiropractor identified as Aboriginal or Torres Strait Islander (0.7%), consistent with national data. Thirty-nine individuals reported one or more disabilities, including mental health conditions ($n = 18$), neurodevelopmental disorders ($n = 15$), chronic conditions ($n = 10$), and others such as hearing and mobility impairments.

Using the PFI cut-off >1.33[21,30,31] to indicate burnout, 76 individuals (38%) in the sample were classified as burnt out, including 26 chiropractic students (54.17%) and 50 chiropractors (32.9%). By career stage, 47% of chiropractors who had been practising for less than 5 years were classified as burnt out, 40% who had been in the field between 6 and 20 years were burnt out, and 16% of chiropractors who had been practising for over 21 years were classified as burnt out.

Most participants reported satisfaction with their job or training; however, 41 (20.6%) were neutral or dissatisfied. While only 12% of chiropractors who had been practising for over 21 years were dissatisfied with their jobs, 34% who were practising for less than 5 years reported job dissatisfaction. Depressive and anxiety symptom scores were negatively skewed, with 83 participants (41.5%) reporting no symptoms of depression. A score of > 3 indicated possible depression, with 12.5% participants overall screening positive.[25] Clinically significant anxiety, defined by a GAD-7 score >10, was reported by 21% of the sample.[24] In total, 24 participants (12.5%) reported experiencing thoughts of suicide in the past 12 months, including seven students and 17 practising chiropractors. Substance misuse over the past 12 months revealed 120 individuals (61.2%) exceeding recommended alcohol intake, 20 (10.3%) using other drugs, 19 (9.7%) using cannabis, 14 (7.5%) using tobacco, and 13 (6.6%) using stimulants. One individual reported opioid use.

Table 1.
Demographics of the sample: practising chiropractors versus chiropractic students.

Characteristic	Full sample ($N = 200$)	Career Stage		Difference
		Chiropractor ($n = 152$)	Chiropractic Student ($n = 48$)	
Gender *n (%)*				
Male	90 (45.5)	67 (44.1)	23 (50.0)	$X_2(1) = 0.50, p = .480$
Female	108 (54.5)	85 (55.9)	23 (50.0)	
Age *n (%)*				
<31	70 (35.4)	34 (22.5)	36 (76.6)	$X_2(4) = 50.98, p < .001$
31-50	80 (40.4)	71 (47.0)	9 (19.1)	
>51	48 (24.2)	46 (30.5)	2 (4.3)	
Disability *n (%)*				
Yes	39 (19.5)	29 (19.1)	10 (20.8)	$X_2(1) = 0.07, p = .789$
State *n (%)*				
NSW	74 (37.0)	56 (36.8)	18 (37.5)	$X_2(7) = 16.06, p = .025$
QLD	63 (31.5)	43 (28.3)	20 (41.7)	
VIC	25 (12.5)	24 (15.8)	1 (2.1)	
SA	9 (4.5)	9 (5.9)	0 (0)	
ACT	3 (1.5)	3 (2.0)	0 (0)	
NT	1 (0.5)	1 (0.7)	0 (0)	
WA	22 (11.0)	13 (8.6)	9 (18.8)	
TAS	3 (1.5)	3 (2.0)	0 (0)	

Characteristic	Full sample (N = 200)	Career Stage		Difference
		Chiropractor (n = 152)	Chiropractic Student (n = 48)	
Length in Career Stage				
<5 years	32 (21.3)	32 (21.3)		
6 – 20 years	60 (40.0)	60 (40.0)		
>20 years	58 (38.7)	58 (38.7)		
Practice Location *n (%)*				
Urban/Suburban	117 (78.0)	117 (78.0)		
Small Town/Rural	30 (20.0)	30 (20.0)		
Geographically isolated/ remote	2 (1.3)	2 (1.3)		
Telehealth	1 (0.7)	1 (0.7)		
Aboriginal or Torres Strait Islander *n (%)*	1 (0.5)	1 (0.7)	0 (0)	$X_2(1) = 0.317, p = .573$
Job Satisfaction *n (%)*				
No	41 (20.6)	32 (21.1)	9 (19.1)	$X_2(1) = 0.08, p = .778$
Suicidal Ideation *n(%)*				
Yes	24 (12.5)	17 (11.5)	7 (15.9)	$X_2(1) = 0.61, p = .436$
Alcohol Use[1,2] *n (%)*				
Yes	120 (61.2)	93 (62.0)	27 (58.7)	$X_2(1) = 0.16, p = .687$
Stimulants Use[2] *n (%)*				
Yes	13 (6.6)	8 (5.3)	5 (10.9)	$X_2(1) = 1.74, p = .187$
Tobacco use[2] *n (%)*				
Yes	14 (7.5)	9 (6.4)	5 (10.9)	$X_2(1) = 1.26, p = .262$
Cannabis Use[2] *n (%)*				
Yes	19 (9.7)	12 (8.1)	7 (15.2)	$X_2(1) = 2.05, p = .152$
Opioids Use[2] *n (%)*				
Yes	1 (0.5)	1 (0.7)	0(0.0)	$X_2(1) = 0.31, p = .577$
Other Drug Use[2] *n(%)*				
Yes	20 (10.3)	14 (9.4)	6 (13.0)	$X_2(1) = 0.51, p = .476$
Burnout[3] M[4](SD[5])	1.21 (0.89)	1.11 (0.91)	1.51 (0.76)	$T(198) = 2.78$, $p = .006$
WE[6] M(SD)	1.65 (1.12)	1.41 (1.05)	2.40 (1.00)	$T(198) = 5.48$, $p < .001$
ID[7] M(SD)	0.89 (0.85)	0.89 (0.88)	0.91 (0.76)	$T(196) = -0.32$, $p = .753$
Depression[8] M(SD)	1.35 (1.59)	1.21 (1.54)	1.77 (1.69)	$T(198) = 2.14$, $p = .033$
Anxiety[9] M(SD)	6.69 (5.60)	6.15 (5.59)	8.42 (5.35)	$T(198) = 2.48$, $p = .014$
Total work hours[10] M(SD)	40.71 (17.56)	36.83 (13.75)	52.99 (22.26)	$T(198) = 6.03$, $p < .001$
Control over workload M(SD)[11]	2.46 (1.06)	2.64 (1.02)	1.87 (0.98)	$T(195) = -4.56$, $p < .001$

Characteristic	Full sample (N = 200)	Career Stage		Difference
		Chiropractor (n = 152)	Chiropractic Student (n = 48)	
Resources[12] M(SD)	1.95 (0.75)	2.01 (0.76)	1.71 (0.68)	T (179) = -2.33, p = .021

[1]For men, five or more drinks in a day; for women, four or more drinks in a day, [2]Over the last 12 months, [3]Burnout: Professional Fulfillment (PFI) Scale (0-4 range: higher scores reflective of higher burnout), [4]mean, [5]standard deviation, [6]Work Exhaustion (PFI sub-scale) (0-4 scale: higher scores reflective of higher work exhaustion), [7]Interpersonal Disengagement (PFI sub-scale) (0-4 range: higher score reflective of higher interpersonal disengagement), [8] Depression: Patient Health Questionnaire-2(PHQ-2) (0-6 range: higher score reflective of higher depression symptoms), [9]Anxiety: General Anxiety Disorder-7 (GAD-7) (0-21 range: higher scores reflective of more anxiety symptoms), [10]Total hours of patient care, administrative tasks, course work, training, other duties, [11]1-5 range: higher scores reflective higher work control, [12]1-4 range: higher scores reflective of higher satisfaction with efficiency and resources.

Between Group Differences

Job satisfaction ($X2$ (1) = 0.08, p = .778) and suicidal ideation ($X2$ (1) = 0.61, p = .436), and drug and alcohol use did not statistically significantly differ between chiropractors and students. Chiropractic students had higher overall burnout scores compared to chiropractors (T(198) = 2.78, p = .006). While interpersonal disengagement scores did not differ (T(196) = -0.32, p = .753), work exhaustion scores were higher for chiropractic students (T(198) = 5.48, p < .001). Chiropractic students also had higher depression scores compared to chiropractors, and students showed higher anxiety scores compared to chiropractors. Students reported higher hours of work per week, less control over their workload and less satisfaction with efficiency and resources.

Preliminary Burnout Estimates

A multivariable linear regression model (Table 2) was conducted to examine whether depression, anxiety, suicidal ideation, job demands and resources were preliminarily associated with levels of burnout in Australian chiropractors and chiropractic students. The adjusted statistical model was statistically significant, F(10, 171) = 234.74, p < .001, explaining 59% of the variance in burnout (R^2adj= 0.59). Higher depression and higher anxiety scores were associated with higher rates of burnout and sustained in the adjusted statistical model.

Table 2.
Multivariable linear regression models: burnout.

Variable	Unadjusted Model		Adjusted Model	
	β (SE)	95% CI	β (SE)	95% CI
Depression	0.25*** (0.05)	[0.14, 0.35]	0.26*** (0.05)	[0.15, 0.36]
Anxiety	0.04*** (0.01)	[0.01, 0.06]	0.03* (0.02)	[0.00, 0.06]
Suicidal Ideation	-0.01 (0.22)	[-0.41, 0.44]	0.05 (0.22)	[-0.38, 0.48]
Total Hours	0.00 (0.00)	[-0.00, 0.01]	0.00 (0.00)	[-0.00, 0.01]
Workload Control	-0.11* (0.05)	[-0.21, -0.01]	-0.09 (0.05)	[-0.20, -0.01]
Resources	-0.09 (0.06)	[-0.21, 0.03]	-0.09 (0.06)	[0.22, 0.03]

β: unstandardised regression coefficients; SE: bootstrapped standard errors, CI = confidence interval [lower, upper]; *p < .05. **p < .01. ***p < .001. Adjusted model includes the covariates age, gender, and career stage.

Preliminary Job Satisfaction Estimates

A multivariable logistic regression model was conducted to preliminarily examine whether depression, anxiety, suicidal ideation, job demands and resources were associated with job satisfaction (0 = not satisfied, 1 = satisfied) in Australian chiropractors and students. Table 3 presents the unadjusted and adjusted statistical models. The adjusted logistic regression model was statistically significant ($\chi 2$ (10) = 58.84, $p < .001$), with McFadden's pseudo $R^2 = 0.35$. The variable efficiency and resources significantly contributed to the adjusted model (OR = 2.98, 95% CI [1.39, 6.39], $p = .005$), as did control over workload (OR = 2.03, 95% CI [1.14, 3.62], $p = .016$). The adjusted statistical model revealed a statistically significant association between depression and job satisfaction (OR = .60, 95% CI [0.39, 0.93], $p = .022$), indicating that individuals with higher levels of depression were less likely to report satisfaction with their jobs or training. The adjusted model identified no statistically significant association between anxiety, suicidal ideation, and total hours of work.

Table 3.
Multivariable logistic regression models: Job satisfaction

	Unadjusted Model		Adjusted Model	
Variable	OR (SE)	95% CI	OR (SE)	95% CI
Depression	0.64* (0.14)	[0.42, 0.97]	0.60* (0.13)	[0.39, 0.93]
Anxiety	0.95 (0.06)	[0.84, 1.08]	0.94 (0.06)	[0.83, 1.08]
Suicidal Ideation	1.83 (1.54)	[0.35, 9.55]	2.82 (2.62)	[0.46, 17.42]
Total Hours	1.01 (0.02)	[0.98, 1.04]	0.99 (0.02)	[0.96, 1.03]
Workload Control	1.82* (0.50)	[1.07, 3.10]	2.03* (0.60)	[1.14, 3.62]
Resources	2.98** (1.12)	[1.43, 6.21]	2.98** (1.16)	[1.39, 6.39]

OR = odds ratio; SE = Standard Error; CI = confidence interval; $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$. Adjusted model includes the covariates age, gender, and career stage.

Post-Hoc Sensitivity analysis

To investigate the difference between the student and clinician samples, both linear and logistic regression models were conducted in each sub-sample. For burnout, when results were stratified by chiropractor and student, chiropractors exhibited a statistically significant relationship with depression and burnout but not anxiety. In chiropractic students, no statistically significant results were found between any variables and burnout. For job satisfaction, when results were stratified by career stage, a statistically significant relationship was found between job satisfaction and the predictors depression and efficiency and resources. No statistically significant relationships were found between any of the predictors and job satisfaction in the student sample. This sensitivity analysis should be interpreted with caution due to the preliminary nature of these results and the smaller student sample.

Discussion

This study examined the well-being of Australian chiropractors and students, aiming to establish preliminary levels of burnout and job satisfaction within the Australian chiropractic profession. It offered insights into the psychological functioning, substance use, burnout and job satisfaction levels of those in the industry. The findings offer novel insights into the deployment of the National Chiropractic Mental Health Survey in an Australian setting and further reveal how socio-demographic factors and the chiropractic clinical work environment influence the well-being of Australian chiropractors.

Despite the relevance and importance of this study to the global chiropractic community[6], our Australian response rate did not reflect this need and future research should carefully consider how to improve this. This survey has seen much higher response rates internationally

despite similar communication plans being developed and implemented in Australia. The Australian chiropractic landscape reflects a fragmented professional association, compared to Canada or Denmark, where these associations represent >85% of the profession. Future research requires a more coordinated communication plan between stakeholders, educational institutions and professional bodies to engage chiropractors and chiropractic students in the importance of this work and professional sustainability.

Burnout levels among Australian chiropractors are comparable to those in other healthcare fields. During COVID-19, 29.5% of 320 Australian healthcare workers screened positive for burnout using the Professional Fulfilment Index (PFI), which was lower than 32.9% in our chiropractic sample.[11] Partridge *et al*.'s literature review of burnout in the international chiropractic field identifies several chiropractic-specific factors contributing to burnout that may also be relevant for the Australian chiropractic community.[6] These included working in acute settings, having a limited scope of practice, work-related injuries, business and administrative duties, and a negative public perception. Notwithstanding the small sample size, preliminary estimates suggest that chiropractic students may face an even higher risk of burnout, with over half classified as burnt out, similar to high-risk student groups such as medical and dental students.[32] In addition to the stressors of studying in a health-related field, chiropractic students in Australia may experience internal conflict about their professional identity due to the divergent viewpoints regarding the identity, scope, and future of chiropractic practice.[33,34] Whilst the profession progresses towards evidence-based care and prioritises research, there are still attempts to retain traditional chiropractic philosophy.[33,34] Discrepancies within the profession's approach to care can lead to confusion for students and early career chiropractors regarding their own professional practice and role identity.[35] In appreciation of the complexity of these issues, researchers should consider exploring whether burnout may be influenced by cognitive dissonance resulting from the conflicting ideologies and divisions within the profession.[34]

Job satisfaction among chiropractors and students was generally high, consistent with that of Australian doctors who report job satisfaction levels exceeding 80%.[36] As with physicians, early-career chiropractors may also experience greater dissatisfaction and burnout due to inexperience, reduced workload control, or increased interpersonal conflicts.[14] The preliminary results indicate that many aspects of chiropractic practice are fulfilling and enjoyable, such as reducing patient pain and work variety.[37] However, this study identified at-risk groups, such as early-career chiropractors and students, where interventions and further research could be directed.

The well-being of Australian chiropractors and students was further explored by measuring psychological functioning alongside contributing factors such as drug use and socio-demographic factors. Continuing the trend of decreased well-being, students reported lower psychological functioning compared to chiropractors. Anxiety was more prevalent than depression, with levels aligning with findings in other healthcare students, who report higher mental health concerns than normative data.[10,11] In this sample, 12.5% of individuals reported suicidal thoughts in the past 12 months, comparable to the 10% of Australian healthcare workers reporting thoughts of suicide or self-harm during the pandemic.[38] Additionally, this study highlighted that a notable proportion of Australian chiropractors and students reported using alcohol and other substances in a way that contradicts health recommendations, raising concerns for patient safety.[39]

This study suggests a link between psychological functioning and burnout in Australian chiropractors. Higher depressive and anxiety symptoms were preliminarily associated with higher burnout scores for chiropractors. This aligns with existing research showing a bidirectional relationship between depression and burnout, where burnout is also a strong predictor of depression.[11] While the two constructs are highly correlated, and it is agreed that they share overlapping symptoms, they remain distinct. Theoretically, burnout primarily affects work-related domains, whereas depression is more pervasive.[3,17] However, real-world experiences are more complex. For example, researchers have found that many individuals who attribute feelings of burnout to their jobs also attribute their feelings of depression to their work.[16] As an explanation for this overlap, depression, given its pervasive nature, can impact all aspects of life, including work, increasing one's risk for burnout.[40] As this is a cross-sectional study, it remains unclear whether individuals attributed their depression and anxiety symptoms to their work or the sequence in which they occurred. Despite

their complex interrelation requiring further study, higher depressive and anxiety symptoms remain a risk factor for burnout in the Australian chiropractic profession.

This study identified that psychological functioning was also associated with job satisfaction, with higher depressive symptoms predicting lower job satisfaction, consistent with previous research.[12] Low anxiety was not associated with job satisfaction in this sample; however, previous literature has indicated a conflicting impact of anxiety on job satisfaction, with some findings indicating a relationship between the two,[12] while others do not.[41] This further highlights the multifaceted nature of job satisfaction, which is influenced by numerous factors.[42,43]

The role of job demands and resources on well-being in the chiropractic profession was highlighted in this study. The JD-R model provides a valuable framework for examining these influences. This study evaluated the resources and demands of chiropractors, examining their impact on burnout and job satisfaction.[9] The job demand of higher total hours worked was found to be preliminarily associated with burnout. Job resources appeared more influential in whether chiropractors are satisfied with their job, with both efficiency and resources and control over workload associated with job satisfaction. These findings emphasise the role that job demands and resources have on experiences of burnout and job satisfaction. The impact of workload on burnout is well-documented, with the relationship being strongest when job control is low, highlighting the protective role of control over workload against burnout.[44,45] For chiropractors in particular, job-specific demands such as physical workload, role ambiguity/conflict and public perception[7] may further amplify stressors that health professionals may generally experience.

Further research on job demands and resources specific to chiropractors and students will have important implications for interventions. For example, introducing programs that promote efficiency and reduce excessive workloads has effectively lowered burnout in similar professions.[6] While many chiropractors, particularly those in private practice, benefit from autonomy, flexibility and workload control, these advantages may be less accessible to those employed by larger companies.[37] Further, providing unified support to students entering a potentially conflicting workforce may assist early career chiropractors to develop their professional identity and evaluate and navigate conflicting ideologies in their workplace. Individually focused strategies that increase personal resources, such as mindfulness and relaxation techniques, have been shown to be effective in reducing anxiety, depression and burnout,[10] as have organisational-based strategies which focus on reducing work hours and accessing peer support.[46]

Strengths and limitations

This study provides valuable initial insights into the factors associated with burnout and job satisfaction among Australian chiropractors and chiropractic students. Still, its findings should be interpreted in light of several limitations. The sample size includes only 2.2% of Australian chiropractors and chiropractic students, which limits generalisability. Online surveys, although convenient, exclude potential participants who lack electronic devices. The study's cross-sectional design limits the ability to draw causal inferences. While relationships between variables were identified, their directionality is not clear. Longitudinal studies could clarify whether these relationships are causal and interdependent. Further, reliance on self-reported data introduces potential biases, such as recall bias, selection bias (e.g., participants struggling with well-being may have been more likely to participate) and underreporting of undesirable behaviours due to social desirability. However, the survey's anonymity likely mitigated these issues. Regardless, it is clear from the results that there are many chiropractors and chiropractic students experiencing symptoms of burnout, depression, anxiety, suicidal ideation and misuse of drugs and alcohol, justifying further investigation of this population.

Conclusion

This study offers preliminary insights into the well-being of Australian chiropractors and students, with a focus on burnout and job satisfaction. The findings of this study suggest that burnout levels in Australian chiropractors are comparable to those of other healthcare professionals, with students at an even greater risk. Levels of reduced psychological functioning were comparable to those of other healthcare professions. Higher depression and anxiety scores were preliminarily associated with higher levels of burnout, and higher depression predicted lower job satisfaction scores. The results of this study should

promote investment from chiropractic educational institutions, government and industry bodies to invest in further research to identify the risk of burnout, job satisfaction and wellbeing, to ensure a healthy and stable chiropractic profession.

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Contributions

Conceptualisation: DM; Methodology: DM, ZR, AD; Analysis: ZR, DM; Data Curation: ZR, DM, AD; Writing – Original Draft Preparation: ZR, DM; Writing – Review & Editing: ZR, DM, MF, KdL, AD.

Data Sharing

Access to de-identified data may be provided on reasonable request. Requests are subject to the establishment of appropriate data governance, and the approval of an independent and recognised human research ethics committee. Requests must be made in writing to ZR.

References

1. Pai P, Olcoń K, Allan J, et al. The SEED Wellness Model: A Workplace Approach to Address Wellbeing Needs of Healthcare Staff During Crisis and Beyond. Front Health Serv. 2022;2:844305. doi:10.3389/frhs.2022.844305
2. Badu E, O'Brien AP, Mitchell R, et al. Workplace stress and resilience in the Australian nursing workforce: A comprehensive integrative review. Int J Ment Health Nurs. 2020;29(1):5-34. doi:10.1111/inm.12662
3. Bridgeman PJ, Bridgeman MB, Barone J. Burnout syndrome among healthcare professionals. Am J Health Syst Pharm. 2018;75(3):147-152. doi:10.2146/ajhp170460
4. Adams J, Lauche R, Peng W, et al. A workforce survey of Australian chiropractic: the profile and practice features of a nationally representative sample of 2,005 chiropractors. BMC Complement Altern Med. 2017;17(1):14. doi:10.1186/s12906-016-1542-x
5. Chiropractic Board of Australia. Chiropractic Board of Australia – 2022/23 annual summary. 2023. Accessed November 4, 2024. https://www.chiropracticboard.gov.au/About-the-Board/Annual-report.aspx
6. Partridge BL, Scott ZE, Roecker CB, Walters SA, Daniels CJ. Burnout amongst chiropractic faculty, practitioners, and trainees: a scoping review. Chiropr Man Ther. 2024;32(1):29. doi:10.1186/s12998-024-00550-3
7. Williams S. Potential unique causes of burnout for chiropractic professionals. J Chiropr Humanit. 2011;18(1):86-93. doi:10.1016/j.echu.2011.09.003
8. Brady KJS, Trockel MT, Khan CT, et al. What Do We Mean by Physician Wellness? A Systematic Review of Its Definition and Measurement. Acad Psychiatry. 2018;42(1):94-108. doi:10.1007/s40596-017-0781-6
9. Galanakis MD, Tsitouri E. Positive psychology in the working environment. Job demands-resources theory, work engagement and burnout: A systematic literature review. Front Psychol. 2022;13. doi:10.3389/fpsyg.2022.1022102
10. Robins TG, Roberts RM, Sarris A. Burnout and Engagement in Health Profession Students: The Relationships Between Study Demands, Study Resources and Personal Resources. Australas J Organ Psychol. 2015;8. doi:10.1017/orp.2014.7
11. Dobson H, Malpas CB, Burrell AJ, et al. Burnout and psychological distress amongst Australian healthcare workers during the COVID-19 pandemic. Australas Psychiatry Bull R Aust N Z Coll Psychiatr. 2021;29(1):26-30. doi:10.1177/1039856220965045
12. Faragher EB, Cass M, Cooper CL. The Relationship between Job Satisfaction and Health: A Meta-Analysis. Occup Environ Med. 2005;62(2):105-112.
13. Sonnentag S. Wellbeing and Burnout in the Workplace: Organizational Causes and Consequences. In: International Encyclopedia of the Social & Behavioral Sciences. Elsevier; 2015:537-540. doi:10.1016/B978-0-08-097086-8.73021-2
14. Dyrbye LN, Varkey P, Boone SL, Satele DV, Sloan JA, Shanafelt TD. Physician Satisfaction and Burnout at Different Career Stages. Mayo Clin Proc. 2013;88(12):1358-1367. doi:10.1016/j.mayocp.2013.07.016
15. Page KM, Vella-Brodrick DA. The 'What', 'Why' and 'How' of Employee Well-Being: A New Model. Soc Indic Res. 2009;90(3):441-458. doi:10.1007/s11205-008-9270-3
16. Koutsimani P, Montgomery A, Georganta K. The Relationship Between Burnout, Depression, and Anxiety: A Systematic Review and Meta-Analysis. Front Psychol. 2019;10. doi:10.3389/fpsyg.2019.00284
17. Ernst J, Jordan KD, Weilenmann S, et al. Burnout, depression and anxiety among Swiss medical students – A network analysis. J Psychiatr Res. 2021;143:196-201. doi:10.1016/j.jpsychires.2021.09.017
18. Kadhum M, Ayinde OO, Wilkes C, et al. Wellbeing, burnout and substance use amongst medical students: A summary of results from nine countries. Int J Soc Psychiatry. 2022;68(6):1218-1222. doi:10.1177/00207640221094955

19. Rank MP, De La Ossa PP. Stress and burnout in chiropractic students of European chiropractic colleges: J Chiropr Educ. 2021;35(1):14-21. doi:10.7899/JCE-19-7
20. Canadian Medical Association. CMA 2021 National Physician Health Survey. August 24, 2022. https://digitallibrary.cma.ca/link/digitallibrary17
21. Trockel M, Bohman B, Lesure E, et al. A Brief Instrument to Assess Both Burnout and Professional Fulfillment in Physicians: Reliability and Validity, Including Correlation with Self-Reported Medical Errors, in a Sample of Resident and Practicing Physicians. Acad Psychiatry. 2018;42(1):11-24. doi:10.1007/s40596-017-0849-3
22. Dolbier CL, Webster JA, McCalister KT, Mallon MW, Steinhardt MA. Reliability and Validity of a Single-Item Measure of Job Satisfaction. Am J Health Promot. 2005;19(3):194-198. doi:10.4278/0890-1171-19.3.194
23. Scanlan JN, Still M. Job satisfaction, burnout and turnover intention in occupational therapists working in mental health. Aust Occup Ther J. 2013;60(5):310-318. doi:10.1111/1440-1630.12067
24. Löwe B, Decker O, Müller S, et al. Validation and Standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the General Population. Med Care. 2008;46(3):266-274. doi:10.1097/MLR.0b013e318160d093
25. Kroenke K, Spitzer RL, Williams JBW. The Patient Health Questionnaire-2: Validity of a Two-Item Depression Screener. Med Care. 2003;41(11):1284-1292.
26. Li C, Friedman B, Conwell Y, Fiscella K. Validity of the Patient Health Questionnaire 2 (PHQ-2) in Identifying Major Depression in Older People. J Am Geriatr Soc. 2007;55(4):596-602. doi:10.1111/j.1532-5415.2007.01103.x
27. Australian Health Practitioner Regulation Agency. Australian Health Practitioner Regulation Agency – Annual report 2023/24. 2024. Accessed December 18, 2024. https://www.ahpra.gov.au/Publications/Annual-reports/Annual-report-2024.aspx
28. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform. 2009;42(2):377-381. doi:10.1016/j.jbi.2008.08.010
29. Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: Building an international community of software platform partners. J Biomed Inform. 2019;95:103208. doi:10.1016/j.jbi.2019.103208
30. Gustafson KA, Bates B, Cline KM, Gothard MD. Concurrent validity of the Professional Fulfillment Index in a sample of pharmacy residents and preceptors. Am J Health Syst Pharm. 2023;80(11):678-686. doi:10.1093/ajhp/zxad043
31. Tam G, Cooper JC, Priest GC, Moore MP, Pohlman K. Burnout syndrome in a single cohort of chiropractic students: A longitudinal study. J Chiropr Educ. 2024;38(1):17-22. doi:10.7899/JCE-23-13
32. Bahlaq MA, Ramadan IK, Abalkhail B, et al. Burnout, Stress, and Stimulant Abuse among Medical and Dental Students in the Western Region of Saudi Arabia: An Analytical Study. Saudi J Med Med Sci. 2023;11(1):44. doi:10.4103/sjmms.sjmms_98_22
33. De Luca KE, Gliedt JA, Fernandez M, Kawchuk G, Swain MS. The identity, role, setting, and future of chiropractic practice: a survey of Australian and New Zealand chiropractic students. J Chiropr Educ. 2018;32(2):115-125. doi:10.7899/JCE-17-24
34. Swain MS, Gliedt JA, De Luca K, Newell D, Holmes M. Chiropractic students' cognitive dissonance to statements about professional identity, role, setting and future: international perspectives from a secondary analysis of pooled data. Chiropr Man Ther. 2021;29(1):5. doi:10.1186/s12998-021-00365-6
35. Gliedt JA, Briggs S, Williams JSM, Smith DP, Blampied J. Background, Expectations and Beliefs of a Chiropractic Student Population: A Cross-Sectional Survey. J Chiropr Educ. 2012;26(2):146-160. doi:10.7899/JCE-11-031
36. Joyce CM, Schurer S, Scott A, Humphreys J, Kalb G. Australian doctors' satisfaction with their work: results from the MABEL longitudinal survey of doctors. Med J Aust. 2011;194(1). Accessed January 6, 2025. https://www.mja.com.au/journal/2011/194/1/australian-doctors-satisfaction-their-work-results-mabel-longitudinal-survey
37. Beynon AM, Walker BF. The best aspects of being a chiropractor. J Can Chiropr Assoc. 2021;65(1):59-65.
38. Bismark M, Scurrah K, Pascoe A, Willis K, Jain R, Smallwood N. Thoughts of suicide or self-harm among Australian healthcare workers during the COVID-19 pandemic. Aust N Z J Psychiatry. 2022;56(12):1555-1565. doi:10.1177/00048674221075540
39. Conigrave KM, Ali RL, Armstrong R, et al. Revision of the Australian guidelines to reduce health risks from drinking alcohol. Med J Aust. 2021;215(11):518-524. doi:10.5694/mja2.51336
40. Iacovides A, Fountoulakis KN, Kaprinis S, Kaprinis G. The relationship between job stress, burnout and clinical depression. J Affect Disord. 2003;75(3):209-221. doi:10.1016/S0165-0327(02)00101-5
41. Szwamel K, Kaczorowska A, Lepsy E, et al. Predictors of the Occupational Burnout of Healthcare Workers in Poland during the COVID-19 Pandemic: A Cross-Sectional Study. Int J Environ Res Public Health. 2022;19(6):3634. doi:10.3390/ijerph19063634
42. Nadinloyi KB, Sadeghi H, Hajloo N. Relationship Between Job Satisfaction and Employees Mental Health. Procedia Soc Behav Sci. 2013;84:293-297. doi:10.1016/j.sbspro.2013.06.554

43. Ozyurt A, HAYRAN O, SUR H. Predictors of burnout and job satisfaction among Turkish physicians. QJM Int J Med. 2006;99(3):161-169. doi:10.1093/qjmed/hcl019
44. Bakker AB, Demerouti E. The Job Demands-Resources model: state of the art. J Manag Psychol. 2007;22(3):309-328. doi:10.1108/02683940710733115
45. Portoghese I, Galletta M, Coppola RC, Finco G, Campagna M. Burnout and Workload Among Health Care Workers: The Moderating Role of Job Control. Saf Health Work. 2014;5(3):152-157. doi:10.1016/j.shaw.2014.05.004
46. Cohen C, Pignata S, Bezak E, Tie M, Childs J. Workplace interventions to improve well-being and reduce burnout for nurses, physicians and allied healthcare professionals: a systematic review. BMJ Open. 2023;13(6):e071203. doi:10.1136/bmjopen-2022-071203

Appendix 1.
Adjusted Multivariable Linear Regression Model: Burnout (student vs. chiropractor)

	Chiropractic Student		Chiropractor	
Variable	β (SE)	95% CI	β (SE)	95% CI
Depression	0.14 (0.15)	[-0.16, 0.44]	0.25*** (0.0)	[0.12, 0.38]
Anxiety	0.04 (0.04)	[-0.04, 0.13]	0.03 (0.02)	[-0.00, 0.06]
Suicidal Ideation	-0.12 (0.40)	[-0.91, 0.66]	0.13 (0.29)	[-0.43, 0.69]
Total Hours	0.00 (0.01)	[-0.01, -0.02]	0.01 (0.00)	[-0.00, 0.01]
Workload Control	-0.27 (0.23)	[-0.72, 0.18]	-0.07 (0.06)	[-0.18, 0.05]
Resources	0.01 (0.22)	[-0.43, 0.44]	-0.14 (0.07)	[-0.29, 0.00]

β: unstandardised regression coefficients; SE: bootstrapped standard errors, CI = confidence interval [lower, upper]; ***$p < .001$. Note: Adjusted model includes the covariates age and gender.

Appendix 2.
Multivariable logistic regression analyses: Job satisfaction (student vs. chiropractor)

	Chiropractic Student		Chiropractor	
Variable	OR (SE)	95% CI	OR (SE)	95% CI
Depression	0.82 (0.90)	[0.10, 7.10]	0.52* (0.14)	[0.31, 0.89]
Anxiety	0.91 (0.34)	[0.43, 1.91]	0.95 (0.07)	[0.82, 1.11]
Suicidal Ideation	0.02 (4.24)	[0.4, 4.0]	3.22 (3.17)	[0.47, 22.10]
Total Hours	1.24 (0.17)	[0.95, 1.61]	0.96 (0.02)	[0.92, 1.01]
Workload Control	93.24 (277.68)	[0.27, 31959.45]	1.50 (0.46)	[0.82, 2.75]
Resources	637.50 (2868.43)	[0.09, 4310049]	2.95** (1.21)	[1.32, 6.59]

OR = odds ratio; SE = Standard Error; CI = confidence interval; *$p < .05$. **$p < .01$. Adjusted model includes the covariates age, gender, and career stage. Note: due to model complexity and the smaller sample of the student population, including covariates age and gender was not feasible.