

Associations of stress and burnout among Australian-based doctors involved in after-hours home visits

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RESEARCH

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ABSTRACT

Background

The after-hours house call (AHHC) service in Australia is growing, but studies have never explored the doctor variables associated with burnout and stress within the service. This study fills this knowledge gap.

Aims

To determine the doctor variables associated with burnout and stress among doctors involved in AHHC.

Methods

A quantitative, questionnaire-based survey of all 300 doctors engaged in AHHC through the National Home Doctor Service (NHDS), Australia's largest home visiting doctor-service provider. The Maslach Burnout Inventory (MBI) was used to assess burnout over a 12-month period from October 2013 to September 2014. Ordinal logistics regression was used to identify significant associations.

Results

There were 168 valid responses received, giving a 56 per cent response rate. The most significant factor associated with reduced stress and burnout is the adoption of self-protection measures while on the job. Such measures include the use of chaperones, the use of panic alarms or buttons, adopting de-escalation techniques, and reliance on relevant surgery policies. Other associations with reduced stress include the attainment of postgraduate fellowships (vocational registration), working less than 24 hours per week, being in legally recognised partnerships, and being male. Conversely, having general practice as a career, being under 40 years of age, and obtaining primary medical degrees from Australia (as opposed to overseas) are all associated with increased burnout for doctors involved in AHHC.

Conclusion

A number of doctor variables have been found to significantly reduce burnout in AHHC. Among these, the adoption of self-protective measures and the attainment of postgraduate fellowships, where possible, should be encouraged among practitioners involved in the service.

Key Words

General practitioners, stress, burnout, family physicians, after-hours, deputising services

What this study adds:

1. What is known about this subject?

Burnout contributes adversely to healthcare delivery by doctors. Doctor variables associated with it are well known for office-based, in-hour general practitioners (GPs), but not for AHHC doctors.

2. What new information is offered in this study?

Adopting protective measures and attaining postgraduate fellowships are associated with reduced burnout in AHHC. Doctors who are young and Australian-trained tend to have higher levels of burnout.

3. What are the implications for research, policy, or practice?

Having determined what causes burnout for doctors engaged in AHHC, steps can be taken to address them, thereby enhancing healthcare delivery after hours.

Background

All medical specialties are prone to burnout,¹ but those involved in the care of patients with chronic and incurable conditions, like general practitioners (GPs) and psychiatrists, are at higher risk.^{2,3} Even though burnout represents a long-term reaction to stress,^{3–5} both terms are used interchangeably in this work.

Early, low-grade stress can provide positive forces that are known to help optimise performances by creating a form of “healthy tension”.^{6,7} However, once it becomes excessive, performance-fatigue sets in, and such constant, high impact burnout can have significant practical implications.⁷ A doctor’s private and professional life could be affected,⁸ with several manifestations, including personal distress, insomnia, family breakdown, drug and alcohol abuse, high job turnover, absenteeism from work, job dissatisfaction, lower quality of care, a cynical attitude toward patients, and high patient-dissatisfaction.^{9–11} These behavioural responses to burnout are the emotional equivalents of physical “withdrawal” from a painful stimulus.¹² Such withdrawals are exemplified by the results of a survey from the United Kingdom published by Chambers in 1993,¹² which found that up to 25 per cent of surveyed GPs had considered leaving general practice due to burnout, while 45 per cent wished to retire at 55 years of age for the same reason.

Some doctor variables associated with stress have been identified by previous studies.^{3,13–18} These variables include too much paperwork, long waits for specialists and tests, having to abide by restrictive rules and regulations, low income, long working hours, monotony at work, lack of recognition, unfavourable health reforms, and being single (including being divorced or widowed). Other associations include administrative bottlenecks, emergency calls, interruptions of family life, and difficult doctor-patient communications.^{13,14} Male GPs were also found to have higher stress levels and lower job satisfaction compared to their female colleagues.^{15,16}

These identified factors can deplete a doctor’s emotional resources (leading to emotional exhaustion), which in turn evoke negative attitudes toward patients (depersonalisation) and towards the doctors themselves (reduced personal accomplishment).¹⁷ These three items of

emotional exhaustion (EE), depersonalisation (DP), and reduced personal accomplishment (PA) are the three major components of burnout.^{3–5} EE, and to some extent, DP has the most consistent relationship with job stress.^{5,10}

Even though the studies cited have looked at the determinants of stress and burnout among regular-hour, office-based GPs, no single published study has addressed this subject for doctors who perform out-of-hours home visits, particularly in Australia where the industry is growing quickly.^{18,19} This study hopes to reduce this knowledge gap, by determining the association(s) between burnout in after-hours house call (AHHC) services and various independent doctor variables. The findings will also have international relevance, given that as many as 71 per cent of the Australian AHHC workforce are overseas-trained doctors (OTDs),²⁰ and 56 per cent of the entire doctor-population in Australia are OTDs.²¹ These numbers indicate that OTDs are very likely to join the medical practice in Australia, including AHHC services, and the findings from this report might provide some guidance to them. In addition, different countries around the world (including the United Kingdom, Canada, France, and the Netherlands)¹⁸ are at different levels of involvement and development of their AHHC industry [also called Medical Deputising Services, (MDS)], and healthcare managers in these countries may wish to look at the findings from this survey as they (re)design their own systems.

Method

Setting and participants

The participants include all doctors (GPs and other specialties) who undertake AHHC through the National Home Doctor Service (NHDS). As at the time of this survey, the number of doctors involved in the service was 300, according to NHDS officials. Three hundred is the study population.

According to the NHDS website,¹⁹ AHHC involves home visits by doctors outside regular working hours, and includes weekdays from 6pm to 8am, weekends from noon on Saturday till 8am on Monday morning, and all day on public holidays.

Given that over the last few years, the NHDS has successfully annexed the largest after-hour general practice clinics in major towns and cities in Australia, it can be safely assumed that a study of NHDS doctors reasonably represents that of the Australian after-hours doctor-community. At the time of this survey, NHDS provided services in Sydney, the Gold Coast, Adelaide, Brisbane Area

(including the Sunshine Coast), and Melbourne Area (including Geelong and Canberra).¹⁹ The terms “Melbourne and Brisbane Areas” reflect the NHDS administrative groupings, and are not based on geographical or political classifications.

A clinical or general manager oversees each NHDS location. The participants were reached through emails sent directly to them by the respective managers in charge of their locations.

Questionnaire

SurveyMonkey was used in the designing and collation of data through an electronic questionnaire. The questionnaire was designed to collect information regarding different doctor variables and burnout items needed for the study. The validated, 22-item Maslach Burnout Inventory (MBI) was used to assess burnout because of its proven reliability, ease of completion, validity, and applicability to GPs.^{4,9,10,22}

The MBI identifies the frequency (how often) various feelings occur over a 12-month period, with questions grouped into the three dimensions of emotional exhaustion (EE; 9 questions), depersonalisation (DP; 5 questions), and reduced personal achievement (PA; 8 questions), totalling 22 questions. The answer to each question rated the experiences on a 7-point Likert Scale, from “never” (0) to “everyday” (6).

Completion of the questionnaire required the participants to recall their feelings over the 12-month period from October 2013 to September 2014. However, the actual data collection (despatch, completion, and return of the questionnaires) took place over a six-week period, from the end of September 2014 to the middle of November 2014. Two reminders were sent out to the participants at fortnightly intervals after the initial despatch.

Analysis

Analyses were with IBM SPSS Version 22 (Armonk, NY: IBM Corp). Only two of the three components of the MBI (EE and DP) were used for the analysis, as these have been found by studies to have direct relationships with burnout, while the third item (PA) has an inverse relationship to it.^{5,10} For this reason, PA was not used to analyse the required associations between burnout and the doctor variables. There were, therefore, a total of 14 MBI item questions available for the analysis.

These 14 items include nine for EE (“feeling emotionally drained”, “feeling used up”, “feeling fatigued in the

mornings”, “driving round is a strain”, “feeling burned out”, “feeling frustrated”, “a feeling of working too hard”, “feeling stressed by working with people”, and “a feeling of being at the end of the rope”), and five for DP (“treating patients impersonally”, “becoming callous to patients”, “becoming emotionally hardened”, “not caring what happens to patients”, and “feeling blamed by patients”).

Because the dependent data (the 14 MBI items) were ordinal categorical data, ordinal logistics regression (OLR) was used to explore the associations between them and the 11 “independent” doctor variables. The use of logistics regression (LR) allowed for the effect of each dependent variable to be analysed while minimising the confounding effects of the others.

To facilitate this analysis, each of the original 11 independent variables obtained on the questionnaire were re-coded into two categories as follows: gender (male and female), age (<40 years and ≥40 years), specialty (GPs and non-GPs), marital status (legally coupled and single), family setting (living with kids and not living with kids), postgraduate vocational status (fellows and non-fellows), hours worked per week (<24 hours and ≥24 hours), duration in after-hours service provision (≥2 years and >2 years), country of primary degree (Australian trained and overseas trained), and the use of protective measures while on AHHC service delivery (yes or no). For the locations, each service area (Adelaide, Brisbane Area, Gold Coast, Melbourne Area, and Sydney) became a variable on its own, each with two categories of “yes” or “no” in relation to whether a respondent worked in the area or not. Therefore, a total of 15 independent variables were used for the final analysis.

For clarity, a respondent is considered to use a protective measure if, during AHHC, the doctor consciously adopted any of the protective measures contained in the questionnaire. These measures include “availing oneself of the surgery policies”, the “use of chaperones/security personnel”, the use of “self-defence or de-escalation strategies”, and the use of “panic buttons” or “personal alarms”. Respondents who answered “no” to the question of use or otherwise of protective measures, or who were “unsure of what to do”, or those who “had never thought about using protective measures”, were all re-coded into the “no” category for the analysis.

For each analysis, an odds ratio (OR) was generated by calculating the exponents of the SPSS-generated beta-coefficients. Each result is reported with a 95 per cent confidence interval (CI), with a significant level (*p* value) of

less than 0.05. As is required for LR, one of the two categories for each independent variable became a “reference”, and ORs for the respective variables are interpreted with respect to these references.

Results

Basic response characteristics

Three hundred questionnaires were sent out, of which 172 were returned. Because the “basic bio-data section” in four of the returned questionnaires was not completed, they were excluded from the analysis, leaving a total of 168 valid responses (56 per cent response rate).

The basic response characteristics, which cover the independent doctor-variables, are summarised in Tables 1 and 2. Analysis indicated that among the respondents, 80.4 per cent were males, 89.3 per cent were in some form of recognised partnerships or legal unions (married, cohabitation, and civil partnerships), and 68.5 per cent live with children. More than half (53.6 per cent) are 40–60 years of age, while 41.1 per cent are under 40 years of age. Only 5.4 per cent are 60 years of age.

Most respondents (84.4 per cent) are GPs, while the rest came from other specialties like surgery, emergency department, medical, and other specialties. Among the GPs, a slight majority (55.5 per cent) have not attained postgraduate fellowships (not vocationally-registered). Only 28.1 per cent of the respondents obtained their primary medical degrees in Australia, while the rest are overseas trained.

Exactly half of the respondents have been in AHHC for two years or less, while 16.3 per cent have stayed for up to 10 years or more. The remaining 33.8 per cent have worked for between two and 10 years. Finally, 38.8 per cent work less than 24 hours per week, while the remainder work 24 hours or more in a week.

Associations of burnout with doctor variables

Only statistically significant associations (or those nearly so) are shown in Tables 3 and 4. Each of the two dimensions of the MBI (EE and DP) analysed and its items are presented separately.

Emotional Exhaustion (EE) (Table 3):

On analysis, doctors who hold postgraduate fellowships were found to be 65 per cent less likely to report the “feeling of being emotionally drained” (OR 0.35; $p=0.03$; CI 0.14 to 0.90), and 72 per cent less likely to report “working

too hard” (OR 0.28; $p=0.01$; CI 0.11 to 0.74) compared to those without fellowships.

It was equally found that doctors in recognised partnerships were 78 per cent less likely to report “feelings of frustration” compared to single ones (OR 0.22; $p=0.04$; CI 0.05 to 0.95), while males were 80 per cent less likely to report a feeling of “being at the end of the rope” compared to females (OR 0.20; $p=0.01$; CI 0.06 to 0.72).

Career GPs (those who identified general practice as their vocation) are nearly 17 times more likely to report “feeling strained” when compared to those from other specialties (OR 16.95; $p=0.02$; CI 1.59 to 184.93), while those who obtained their primary medical degree in Australia are three times more likely to report a “feeling of frustration” compared to OTDs (OR 3.14; $p=0.03$; CI 1.09 to 9.01).

With respect to location, doctors working in the Brisbane Area are 85 per cent less likely to report “being strained” (OR 0.15; $p<0.01$; CI 0.05 to 0.44), 72 per cent less likely to report “working too hard” (OR 0.28; $p=0.01$; CI 0.11 to 0.74), and 68 per cent less likely to report “being fatigued in the mornings” (OR 0.32; $p=0.02$; CI 0.12 to 0.84) compared to those working elsewhere. Respondents working in Sydney were also 76 per cent less likely to report “being fatigued” (OR 0.24; $p=0.04$; CI 0.06 to 0.93), but those working in Melbourne were four times more likely to report “being burnt out” (OR 4.10; $p=0.02$; CI 0.08 to 0.78).

Finally, the study found multiple associations with the use of protective measures. Those with these measures in place were 78 per cent less likely to report “being emotionally drained” (OR 0.22; $p<0.01$; CI 0.11 to 0.49), 58 per cent less likely to report “feeling fatigued” (OR 0.42; $p=0.02$; CI 0.20 to 0.89), and 72 per cent less likely to “feel strained on driving around” (OR 0.28; $p<0.01$; CI 0.13 to 0.61). They were also 78 per cent less likely to report “feeling frustrated” (OR 0.22; $p<0.01$; CI 0.10 to 0.49), 81 per cent less likely to report “working too hard” (OR 0.19; $p<0.01$; CI 0.9 to 0.43), 86 per cent less likely to “feel stressed by working with people” (OR 0.14; $p<0.01$; CI 0.06 to 0.33), and 94 per cent less likely to report “feeling at the end of the rope” (OR 0.06; $p<0.01$; CI 0.02 to 0.22). Even though these doctors were also 52 per cent less likely to report “feeling used up”, this finding only just missed statistical significance (OR 0.48; $p=0.05$; CI 0.23 to 1.00).

It is worth mentioning that on the EE dimension, no significant associations were found between any burnout dimension and “age”, “living with kids”, “the number of

hours worked per week”, “duration of employment”, or working in the Gold Coast, Adelaide or Sydney.

Depersonalisation (DP) (Table 4):

With respect to gender, males were found to be 77 per cent less likely to report a feeling of “blame by patients” (OR 0.23; $p=0.01$; CI 0.08 to 0.66) compared to females, while doctors who work less than 24 hours per week were also 77 per cent less likely to report “treating patients impersonally” compared to those who do more hours per week (OR 0.23; $p=0.03$; CI 0.06 to 0.89).

Respondents aged “less than 40 years” were four times more likely to report a feeling of “not caring what happens to patients” compared to their older colleagues (OR 4.25; $p=0.03$; CI 1.23 to 16.01), while doctors working in the Brisbane Area were less likely to “treat patients impersonally” (OR 0.08; $p=0.03$; CI 0.01 to 0.79), or to “become emotionally hardened” (OR 0.22; $p=0.02$; CI 0.06 to 0.77) compared to those not working in the city.

Finally, doctors with personal protective measures were found to have multiple significant associations. They were 82 per cent less likely to “treat patients impersonally” (OR 0.18; $p<0.01$; CI 0.06 to 0.54), 78 per cent less likely to “become emotionally hardened” (OR 0.22; $p<0.01$; CI 0.09 to 0.56), 79 per cent less likely to “not care what happens to patients” (OR 0.21; $p<0.02$; CI 0.06 to 0.76), and 72 per cent less likely to “feel blamed by patients” (OR 0.28; $p=0.01$; CI 0.11 to 0.67).

Again, it is worthwhile mentioning that, on the DP dimension, no significant association was found between any burnout dimension and “country of primary degree”, “living with kids”, “the number of hours worked per week”, “specialty”, “vocational status”, “duration in the AHHC service”, or working in the Gold Coast, Adelaide, Sydney or Melbourne Area.

Discussion

In this population-based survey analyses, it was discovered that only 19.6 per cent of the respondents were females, indicating a lesser representation for them in AHHC compared to their proportion in the Australian general practice population (where 43 per cent of doctors are females).²¹ This may be related to the higher apprehension female doctors express regarding the safety of AHHC, as was found in another study.²³ There is a chance, though, that this lower female proportion may be a result of fewer females responding to this survey. This possibility may best be explored in future surveys.

It was not clear why vocationally registered GPs (VR doctors or postgraduate fellows) reported less burnout with respect to “feeling emotionally drained” and “working too hard” compared to non-VR doctors (65 per cent less and 72 per cent less, respectively), but one can assume that some skills acquired in the process of gaining postgraduate fellowships might be useful in limiting stress associated with after-hour house calls. A previous study of regular-hour GPs in the UK²⁴ had reported higher stress levels among non-VR doctors associated with “lack of recognition”, “rate of pay”, and “variety of work”, but this study found no such relationships.

The finding that doctors in recognised, emotionally supportive partnerships (married, de facto, or cohabitation) are 78 per cent less likely to report burnout from “feelings of frustration” in the job compared to single doctors (never married, separated, or widowed) is in agreement with reports from various other studies.^{3,14,24} One can argue that being in these stable social unions provides a means of moderating job-related stress, a theory supported by published studies.^{25,26}

The significant associations found between being male and reduction with some aspects of burnout among doctors in AHHC is not entirely surprising. The study found that, compared to females, males were 80 per cent less likely to report “feeling at the end of the rope” and 77 per cent less likely to report “feeling blamed by patients”. These may be related to the higher apprehension associated with women engaged the service.²³ However, this finding seems to differ from findings of higher stress levels among male GPs compared to females, reported in a UK survey of doctors not involved in AHHC.¹⁵ Further research may help unravel the real reasons behind this major finding.

The finding that vocational (career) GPs are 17 times more likely to report that “driving round is a strain” compared to those from other specialties may be related to the fact that AHHC is primarily a general practice job (84 per cent of the respondents being GPs; Table 1). They are, therefore, more likely to take on the job on a full-time basis compared to non-GPs (who generally get involved in the service on a part-time basis only). Full-time doctors are more likely to drive around more in a given period, and are therefore more likely to become “strained” and report burnout on this issue. This finding differs from the “excellent” or “very good” level of well being reported by career GPs involved in regular hours, general practice jobs in a study published in 2006.¹⁴

In keeping with the theory above, doctors who work less than 24 hours per week were found to be 77 per cent less likely to report a feeling of “treating patients impersonally” compared to those who do more hours each week. This finding is very much in line with reports from multiple studies,^{16,24,27–31} which have established that long working hours is associated with increased job stress.

It is also noted that doctors who obtained their primary medical degrees in Australia are three times more likely to report a feeling of “being frustrated” compared to OTDs. The reason behind this is unclear, and may be worth exploring in future surveys.

The finding of a 68 per cent to 85 per cent range of less burnout among doctors working in Brisbane and its surrounding areas regarding “strain on driving around”, “a feeling of working too hard”, and of being “fatigued in the mornings” compared to doctors not in this city, may be hard to explain without further research. These doctors were also less likely to report “treating patients impersonally” or “becoming emotionally hardened” while involved in AHHC. However, given the relatively less busy traffic in Brisbane compared to other locations like Sydney and Melbourne, one may surmise that there is less time pressure associated with working in Brisbane, and this fact may be responsible for these results.

Previous studies^{16,32} have also established that “time pressure” is associated with increased job stress. This theory may also explain the finding that working in Melbourne is associated with four times higher levels of stress and burnout than working outside it. However, Sydney, which would be expected to be in the same league as Melbourne in terms of stress levels, was found to be associated with a 76 per cent less likelihood of doctors reporting a “feeling of fatigue” while on AHHC. The unexpected report from Sydney may be related to the fact that the NHDS service in Sydney at the time of this survey was in its early stages of establishment, with fewer doctors (10.6 per cent of respondents) and fewer patients than all other locations. Less fatigue can therefore be expected in Sydney given these circumstances.

Doctors under 40 years of age are more than four times more likely to report a feeling of “not caring what happens to patients” compared to older doctors. This is not surprising given that an Australian study had earlier found that burnout, particularly emotional exhaustion and depersonalisation, are more common in younger GPs than older GPs.¹² Another survey in the United States also found

that, across all specialties, doctors in their middle careers (likely younger) report the highest burnout and dissatisfaction rates.³³

Finally, but rather interestingly, the use of protective measures while on AHHC (chaperones, panic alarms, etc.) is associated with much lower stress and burnout on both the EE and DP dimensions. By adopting protective measures, burnout is reduced by figures ranging between 52 per cent and 94 per cent on eight out of the nine EE items on the MBI. On the DP dimension, burnout reduction ranges from 72 per cent to 82 per cent on four out of the five items. From these findings, it is obvious that the adoption of protective measures confers profound advantages with stress and burnout while on AHHC. Unfortunately, the use of protective measures by doctors in the Australian AHHC industry is still not common, with a recent survey²⁰ finding that more than half of the doctors had no such measures in place.

Study limitations

The fact that locations in other Australian states and territories like Tasmania, Western Australia, and the Northern Territory were not represented in the study is considered a limitation. However, because of the limited after-hours services in these areas at the time of the survey, this limitation is unlikely to have had significant effects on the study outcomes. Another limitation is the fact that respondents relied on recalls to complete the questionnaire. Even though this is likely to introduce a recall bias, the option to choose from a set of Likert-scale range of responses rather than absolute figures, minimises the level of any bias arising from this.

Recommendations

This study recommends that doctors involved in AHHC be encouraged to adopt protective measures while on AHHC, as this has been found to significantly lower stress and burnout among doctors in this important area of medical services. Doctors in AHHC should also be encouraged to attain postgraduate fellowships (VR status), as this is equally important in relation to stress reduction. However, knowledge of the possible barriers to attaining VR status and devising ways to address them may help in actualising this.

Conclusions

This study concludes that among doctors in AHHC service, the most significant factor in reducing stress and burnout is the adoption of protective measures while on the job. Decreased burnout is also associated with the attainment of

postgraduate fellowships, working less than 24 hours per week, being male, being in legally recognised partnerships, and working in the city of Brisbane. By contrast, higher stress in AHHC was found to be associated with being a vocational general practitioner, being younger, being trained outside Australia, and working in the city of Melbourne. Finally, the study concludes that “living with kids”, and “the number of years spent in AHHC” does not have any significant association with burnout for doctors involved in AHHC.

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PEER REVIEW

Not commissioned. Externally peer reviewed.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

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ETHICS COMMITTEE APPROVAL

Ethical clearance was obtained from the Human Research Ethics Committee of the Griffiths University, Australia (GU Ref No: MED/47/14/HREC), prior to commencing the study.

Table 1: Basic statistics of the respondents involved in after-hours house call services

Statistic	Parameters	N	%
Gender Valid=168	Male	135	80.4
	Female	33	19.6
Age Range (Yrs) Valid=168	39 or less	69	41.1
	40-60	90	53.6
	Over 60	9	5.4
Vocational/Registration status Valid=137	Vocationally registered (Fellows)	61	44.5
	Non-vocationally registered (Non-fellows)	76	55.5
Primary degree Valid=160	Australian-trained	45	28.1
	Overseas: New Zealand	6	3.8
	Overseas: other	109	68.1
Specialty Valid=160	General Practice	135	84.4
	Medical	7	4.4
	Surgical	2	1.3
	Emergency Department	6	3.8
	Others ^a	10	6.3
Location of Service Valid=160	Adelaide	51	31.9
	Brisbane Area ^b	36	22.6
	Gold Coast	23	14.4
	Melbourne Area ^c	31	19.4
	Sydney	17	10.6
	Other (unfixed location)	2	1.3

^aOthers = Occupational physicians, Paediatricians, Public Health, etc.

^bBrisbane Area = Brisbane and Sunshine Coast

^cMelbourne Area = Melbourne, Geelong and Canberra

Table 2: Basic statistics of the respondents involved in after-hours house call services

Statistic	Parameters	N	%
Duration in after-hours Valid=160	≤2 yrs	80	50.0
	2-10 yrs	54	33.8
	>10 yrs	26	16.3
Hours worked/week Valid=160	<24 hrs/week	62	38.8
	24 to 37.5 hrs/week	47	29.4
	>37.5 hrs/week	51	31.9
Marital status (Relationship Status) Valid=168	<i>Married</i>	140	83.3
	Single	12	2.4
	De facto ^a	10	6.0
	Separated	4	2.4
	Widowed	2	1.2
Family setting Valid=168	Lives with own kids	115	68.5
	Have kids/live with none	17	10.1
	No kids/Live with none	36	21.4
Whether protective measures used or not Valid=151	Yes	65	43.0
	No	29	19.2
	Have never thought about it	9	6.0
	Have thought about it, but unsure of what to do	48	31.8

^aDe facto = Co-habitation and civil partnership

Table 3: Ordinal logistics regression showing associations between doctor variables and emotional exhaustion (EE) among after-hours house call doctors

Stress Item (EE)	Doctor-variables	Odds ratio (OR)	95% CI of OR		Significance (p value)
			Lower	Upper	
Feeling emotionally drained	VR ^a (vs. non-VR)	0.35	0.14	0.90	0.03
	Has protection (vs. none)	0.22	0.11	0.49	<0.001
Feeling used up	Has protection (vs. none)	0.48	0.23	1.00	0.05*
Feeling fatigued in the mornings	Work in Brisbane (vs. not)	0.32	0.12	0.84	0.02
	Work in Sydney (vs. not)	0.24	0.06	0.93	0.04
	Has protection (vs. none)	0.42	0.20	0.89	0.02
Driving round is a strain	GPs ^b (vs. non-GPs)	16.95	1.59	184.93	0.02
	Work in Brisbane (vs. not)	0.15	0.05	0.44	<0.001
	Has protection (vs. none)	0.28	0.13	0.61	0.001
Feeling burned out	Work in Melbourne (vs. not)	4.10	0.08	0.78	0.02
	VR (vs. non-VR)	0.32	0.12	0.89	0.03
Feeling frustrated	Australian-trained ^c (vs. OTD ^d)	3.14	1.09	9.01	0.03
	Partnered ^d (vs. Single)	0.22	0.05	0.95	0.04
	Has protection (vs. none)	0.22	0.10	0.49	<0.001
Working too hard	VR (vs. non-VR)	0.28	0.11	0.74	0.01
	Work in Brisbane (vs. not)	0.28	0.10	0.80	0.02
	Has protection (vs. none)	0.19	0.09	0.43	<0.001
Stressed working with people	Has Protection (vs. none)	0.14	0.06	0.33	<0.001
Feeling at the end of the rope	Male (vs. Female)	0.20	0.06	0.72	0.01
	Has protection (vs. none)	0.06	0.02	0.22	<0.001

^aVR: Vocational Registration (postgraduate fellowship)

^bGP: General practitioner

^cOTD: Overseas-trained doctor

^dPartnered: Married and de facto; single: never married, widowed or separated

*Borderline significance

NB: All figures to two decimal places, except if p<0.01*, in which case it is reported to three decimal places.

Table 4: Ordinal logistics regression showing associations between doctor variables and depersonalisation (DP) among after-hours house call doctors

Stress Item (DP)	Doctor-variables	Odds ratio (OR)	95% CI of OR		Significance (p value)
			Lower	Upper	
Treats patients impersonally	Works <24hours/week (vs. works more)	0.23	0.06	0.89	0.03
	Has protection (vs. not)	0.18	0.06	0.54	0.002
	Work in Brisbane (vs. not)	0.08	0.01	0.79	0.03
Became emotionally hardened	Work in Brisbane (vs. not)	0.22	0.06	0.77	0.02
	Has protection (vs. none)	0.22	0.09	0.56	0.001
Does not care what happens to patients	Has protection (vs. none)	0.21	0.06	0.76	0.02
	Age <40 (vs. 40+)	4.25	1.23	16.01	0.03
Feels blamed by patients	Male (vs. Female)	0.23	0.08	0.66	0.01
	Has protection (vs. none)	0.28	0.11	0.67	0.01

NB: All figures to two decimal places, except if $p < 0.01$, in which case it is reported to three decimal places.