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Prescription medication use by emergency department doctors to improve work and academic performance, and to manage stress and anxiety

(running head: prescription medicine use by emergency doctors)

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All authors conceived the study and prepared the study protocol. KE and DT obtained ethics and governance approval. KE arranged for the study details and questionnaire to be distributed by Australasian College for Emergency Medicine (ACEM). KE, DT and ST analysed the data. All authors contributed to writing the manuscript and approved the final, submitted manuscript.

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Study data were entered directly into the REDCap electronic data capture tool hosted by the Austin Hospital Business Intelligence Unit.

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ABSTRACT

Objective

To determine medications used by emergency doctors to improve work and academic performance, and to manage stress and anxiety

Methods

We undertook an online, voluntary, anonymous survey of ACEM fellows and trainees.

Results

139 (46.5%) respondents used a medication under examination. Sleep aids included melatonin (19.1% of respondents) and benzodiazepines (8.7%). Medications to improve performance included modafinil (4.7%), pseudoephedrine (2.0%), melatonin (2.0%) and beta blockers (1.3%). Some medications were taken prior to shifts. Medications to manage stress and anxiety included benzodiazepines (3.0%) and beta blockers (2.0%).

Conclusion

Medication use is common and support for some doctors may be required.

Key words: medication, physician, performance, emergency department

INTRODUCTION

There is increasing anecdotal and research evidence that up to 56% of physicians take medications to aid their work and academic performance.^{1,2} Examples include stimulants for wakefulness, sedatives for stress and other medications for anxiety.

Overseas studies of drug and medication use by emergency medicine trainees have indicated that the use of prescription medications to manage professional stressors is common.^{1,2} As similar research has not been performed in Australasia, the extent and nature of such medication use in this setting is unknown.

We aimed to survey Australasian College of Emergency Medicine (ACEM) fellows and trainees to determine the prevalence and nature of prescription medication use to improve work and academic performance, and to manage stress and anxiety.

METHODS

We undertook a voluntary, anonymous, cross-sectional survey of ACEM fellows and trainees. The study was approved by the Austin Health Human Research Ethics Committee and the ACEM Scientific Committee.

A link to the survey details and questionnaire was included in ACEM Bulletins (October-November, 2019). The survey was also advertised via email to the investigators' contacts and at local administration and education meetings. All fellows and trainees were eligible for participation. There were no exclusion criteria.

A literature search identified medications that ED doctors take to aid their performance. These were supplemented with those where anecdotal evidence indicated their use (see Appendix). Respondents were asked if they had taken any of these medications in the previous 12 months and, if they had, for what purpose and whether it was taken within four hours of shift commencement. The questionnaire was designed for the study and trialed for face validity by three fellows and four trainees. Data were collected with REDCap software.³ The primary outcome was the proportion of fellows and trainees who used medications to improve work and academic performance, and to manage stress and anxiety. The secondary outcome was the nature of the medications used.

The study had 89% power to detect a clinically significant difference of 20% in medication use between the doctor sub-groups. Fisher's exact test was employed to compare the sub-groups ($\alpha=0.05$).

RESULTS

Overall, 299 doctors responded: 138 (46.2%) male, 209 (69.9%) fellows, 168 (56.3%) aged <45 years. 139 (46.5%) respondents used one or more of the medications, with a significantly greater proportion among trainees (Table 1). Melatonin and benzodiazepine use were most common (used by 23.1% and 10.7% of respondents, respectively). Significantly greater proportions of trainees used these medications as well as zopiclone, another sedative. 30/299 (10.0%) respondents used oral opioids and four used injectable opioids. 13/299 (4.3%) used modafinil, with a significantly greater proportion among trainees.

Pseudoephedrine use was the most common medication taken within four hours of a shift (7.0% of respondents). Other medications taken within this period were modafinil, beta blockers, oral opioids, melatonin and benzodiazepines. The frequency of use ranged from 'some' to 'all' shifts.

Melatonin was mostly taken to aid sleep (21.1% of respondents) but also to improve work and academic function (2.0%) (Table 2). Oral benzodiazepines were mostly to aid sleep, although nine respondents used them to relieve stress and anxiety. Pseudoephedrine was mostly used to manage a medical condition but also to improve work and academic function. Opioids were almost always used for a medical condition although one respondent used them to relieve stress. Modafinil was largely taken to improve work and academic performance and to stay alert.

DISCUSSION

139 (46.5%) respondents reported the use of one or more of the medications. Sleep aid use was most common, especially among trainees who work night shifts. Cognitive performance declines among fatigued emergency physicians⁴ and sleep aid use is understandable.⁴

Pseudoephedrine use, including prior to a shift, was common. However, this was mostly for medical conditions.

The use of medications for stress and anxiety is notable. There is evidence that ED doctors are amongst the most stressed.⁵ A broader ACEM investigation of stress/anxiety among fellows and trainees is recommended as support for those at risk may be required.

Opioid use was almost always for medical conditions. The study was not designed to determine if this use was in association with a procedure or an intercurrent painful condition. It is of concern, however, that oral opioids were taken prior to a shift by five respondents and used to relieve stress by another.

This study was limited by a small sample size and the likelihood of substantial selection, recall and prevarication bias. Notwithstanding these limitations, it provides evidence that the use of medications to improve work and academic function, and to manage stress/anxiety, is common.

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Table 1. Medications taken by the respondents within the last 12 months

medications taken	total n	fellows (n=209)	trainees (n=90)	p	medication taken four hours before a shift, n
took one or more of the medications under investigation	139	84 (40.2%)	55 (61.1%)	0.001	
melatonin (≥ 2 mg)	69	35 (16.7%)	34 (37.8%)	<0.001	5
benzodiazepines (oral)	32	16 (7.7%)	16 (17.8%)	0.01	3
pseudoephedrine	30	19 (9.1%)	11 (12.2%)	0.41	21
opioids (oral)	30	19 (9.1%)	11 (12.2%)	0.41	5
zopiclone	19	8 (3.8%)	11 (12.2%)	0.01	0
modafinil	13	5 (2.4%)	8 (8.9%)	0.02	12
beta blockers	12	8 (3.8%)	4 (4.4%)	0.76	6
zolpidem	9	5 (2.4%)	4 (4.4%)	0.46	1
opioids (injectable)	4	2 (1.0%)	2 (2.2%)	0.59	0
lisdexamfetamine	2	2 (1.0%)	0 (0%)	0.99	0
dexamfetamine	2	0 (0%)	2 (2.2%)	0.09	0
armodafinil	0	0	0	-	0
methylphenidate	0	0	0	-	0
benzodiazepines (injectable)	0	0	0	-	0

Table 2. Purpose of prescription medication use

	total	to function better at work	to function better with academic work	to stay alert	to aid sleep	to relieve stress	to relieve anxiety	management of medical condition	other
melatonin (≥ 2 mg)	69	3 (4.3%)	3 (4.3%)	0 (0.0%)	57 (82.6%)	0 (0.0%)	1 (1.4%)	2 (2.9%)	16 (23.2%)
benzodiazepines (oral)	32	0 (0.0%)	1 (3.1%)	0 (0.0%)	26 (81.3%)	4 (12.5%)	5 (15.6%)	1 (3.1%)	2 (6.3%)
pseudoephedrine	30	4 (13.3%)	2 (6.7%)	2 (6.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	24 (80.0%)	4 (13.3%)
opioids (oral)	30	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (3.3%)	0 (0.0%)	27 (90.0%)	2 (6.7%)
zopiclone	19	1 (5.3%)	0 (0.0%)	0 (0.0%)	17 (89.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (21.1%)
modafinil	13	6 (46.2%)	8 (61.5%)	9 (69.2%)	2 (15.4%)	0 (0.0%)	0 (0.0%)	2 (15.4%)	0 (0.0%)
beta blockers	12	0 (0.0%)	4 (33.3%)	0 (0.0%)	0 (0.0%)	1 (8.3%)	5 (41.7%)	6 (50.0%)	1 (8.3%)
zolpidem	9	1 (11.1%)	0 (0.0%)	0 (0.0%)	7 (77.8%)	1 (11.1%)	1 (11.1%)	0 (0.0%)	2 (22.2%)
opioids (injectable)	4	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (50.0%)	2 (50.0%)
lisdexamfetamine	2	0 (0.0%)	0 (0.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (50.0%)	0 (0.0%)
dexamfetamine	2	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (100%)	0 (0.0%)

Prescription medication use by emergency department doctors to aid work and academic performance

Dear member of the Australasian College for Emergency Medicine (ACEM),

Anecdotally, there is increasing use of medications by emergency department (ED) doctors to assist their work and academic performance. Some examples include modafinil, methylphenidate, dexamethylphenidate and zolpidem. This issue is gaining interest and a recent article (*Ann Emerg Med* 2019; 73: 330-332) explored the use of sleep aids among emergency physicians.

The use of medications in this way is not known in Australasia. We have designed this short survey to determine the prevalence and nature of prescription medication use by ED doctors to aid performance. The findings will be presented at scientific meetings and published. They will inform whether further investigation is required or if any intervention or physician assistance is indicated.

The survey has been approved by the Austin Health Human Research Ethics Committee and the ACEM Research Committee. It is voluntary and anonymous and there will be no way in which your identity and responses can be linked. The questionnaire below should take less than 5 minutes to complete. We invite you to complete it. If you do so, you will be giving implied consent to participate.

Thank you for consideration of the survey.

Dr. Karin Eggink (principal investigator)

What is your sex?

male female other

What is your age (years)?

20-30 31-40 41-50 51-60 61 or more

Which State/Territory/Country do you primarily work in?

NSW VIC QLD SA WA ACT
 NT NZ

What is the nature of your primary ED workplace?

Metropolitan Rural

What is your ACEM status?

Fellow

Trainee:

Provisional Early phase advanced Late phase advanced Maintenance phase

Have you taken any of the following medications in the last 12 months?

- | | | |
|-------------------------------------|--------------------------|---------------------------|
| Modafinil (Modavigil) | <input type="radio"/> No | <input type="radio"/> Yes |
| Armodafinil (Nuvigil) | <input type="radio"/> No | <input type="radio"/> Yes |
| Methylphenidate (Ritalin, Concerta) | <input type="radio"/> No | <input type="radio"/> Yes |
| Dexmethylphenidate | <input type="radio"/> No | <input type="radio"/> Yes |
| Dextroamphetamine | <input type="radio"/> No | <input type="radio"/> Yes |
| Pseudo-ephedrine (Sudafed) | <input type="radio"/> No | <input type="radio"/> Yes |
| Opioids (oral) | <input type="radio"/> No | <input type="radio"/> Yes |
| Opioids (injectable) | <input type="radio"/> No | <input type="radio"/> Yes |
| Benzodiazepines (oral) | <input type="radio"/> No | <input type="radio"/> Yes |
| Benzodiazepines (injectable) | <input type="radio"/> No | <input type="radio"/> Yes |
| Zolpidem (Stilnox) | <input type="radio"/> No | <input type="radio"/> Yes |
| Beta blockers | <input type="radio"/> No | <input type="radio"/> Yes |

For every ‘Yes’ checked, a new window will appear with the following questions:

Approximately how often did you take this medication in the last 12 months?

- once monthly weekly daily

Approximately what proportion of shifts have you taken this medication within 4 hours of starting or during the shift?

- never a few one quarter one half three quarters all shifts

Why did you take this medication? You may check one or more responses.

- To function better at work
- To function better with academic work e.g. study, prepare presentations, write articles
- To stay alert
- To aid sleep
- To relieve stress
- To relieve anxiety
- Management of a medical condition, please describe
- other reason, please describe

Was this prescribed for you by another physician?

- Yes No, please describe how you sourced this medication

Thank you for your participation

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