



JUNIOR DOCTORS RUNNING OUTPATIENT CLINICS AFTER A 24-HOUR SHIFT: EFFECTS ON PATIENT SATISFACTION AND PRESCRIPTION ERRORS



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BACKGROUND

- Cognitive performance after 24 hours of wakefulness is comparable to alcohol intoxication¹, sleep apnoea and narcolepsy².
- However, literature on impact of sleep deprivation on doctors' performance is conflicting, with insufficient focus on patient outcomes³.

OBJECTIVE

- To determine if patient outcomes in outpatient clinics are adversely affected when patients consult a post-call registrar vs a non-post-call registrar.

METHODS

- This prospective, quantitative study was set in a high volume, specialist outpatient Cardiology clinic in a large teaching hospital in Singapore.
- Between Nov 2015 and Feb 2016, patients from all clinics run by a post-call registrar were recruited to the **study group**. Patients from non-post-call clinics run by the same registrars on a different day were recruited as **controls**.
- Outcome measures:**
 - Patient satisfaction**, using a validated 5-item 4-point Likert scale questionnaire
 - Prescribing error rate**, defined as number of errors over number of orders
- Definitions**
 - Registrar**: Junior doctor in final stages of training prior to specialist accreditation
 - Post-call**: Last 6 hours of a continuous 30-hour shift
 - Prescribing error**: Includes specification of wrong medicine, dose/frequency, or inadvertent omission of necessary drug
- Statistical analysis using Chi-Square analysis with $p < 0.05$ for statistical significance.

Results: Participant Demographics

Registrar	Gender	Year of training	Post-call clinics		Non-post-call clinics	
			Number of patients seen†	Number of medications ordered	Number of patients seen†	Number of medications ordered
A	Male	1	11	64	7 (1)	52
B	Male	1	7 (2)	33	14 (2)	20
C1	Female	1	8	5	7	23
C2	Female	1	10	28	10	50
D	Male	3	20 (1)	126	17 (4)	93
E	Male	3	8	49	7	50
F	Male	3	11	25	17	60
G	Male	1	19	161	17	92
H	Male	3	12	45	9 (5)	86
Total			106 (3)	536	105 (12)	526

Table 1: Basic demographics of registrars with distribution of patients seen and number of medications ordered per clinic

References

- Dawson D, Reid K. Fatigue, alcohol and performance impairment. *Nature*. 1997;388(6639):235-235.
- Mustafa M, Erokwu N, Ebose I, Strohl K. Sleep problems and the risk for sleep disorders in an outpatient veteran population. *Sleep Breath*. 2005 Jun;9(2):57-63.
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Outcome 1: Patient Satisfaction

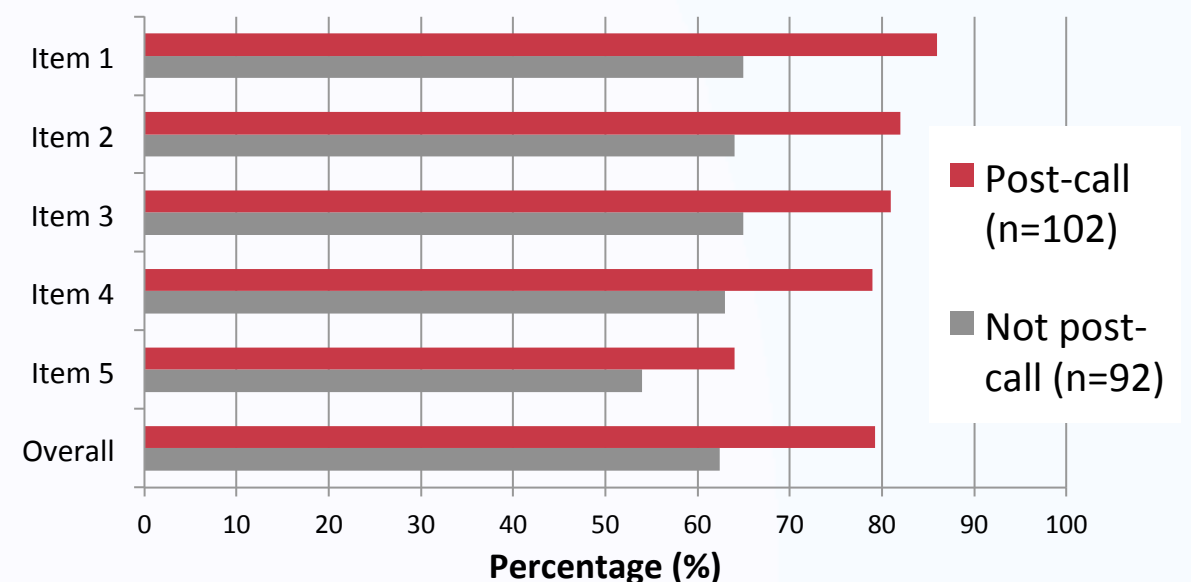


Figure 1: Summary of patient satisfaction questionnaire responses according to registrar's post-call status

Outcome 2: Prescription Errors

Registrar	Post-call		Not Post-call	
	Prescriptions	Errors	Prescriptions	Errors
A	64	0	52	3
B	33	0	20	1
C1	5	0	23	1
C2	28	0	50	0
D	126	5	93	2
E	49	1	50	0
F	25	0	60	1
G	161	1	92	2
H	45	0	86	2
Overall	536	7 (1.31%)	526	12 (2.28%)

Figure 2: Distribution of medications ordered and prescribing errors made according to registrar

RESULTS

- 103 of 106 (97%) patients in 9 post-call clinics and 93 of 105 (90%) patients in 9 non-post-call clinics consented.
- The questionnaire completion rate was 99% in both groups. 536 prescriptions were ordered in the study group, and 526 in controls.
- Overall, **the percentage of top-box responses (indicating greatest satisfaction) was higher in the study group versus controls** (79.3% vs 62.4%, $p < 0.001$). The percentage of top-box responses for each questionnaire item was higher in the study group.
- There was **no significant difference in prescribing error rates** between groups (1.31% vs 2.28%, $p = 0.23$).

DISCUSSION AND CONCLUSIONS

- Although unexpected, our findings importantly provide congruent and quantitative evidence that patients may safely consult a post-call registrar in clinic. **From the patient's point of view, satisfaction levels were not worse.** Objectively, drug prescription errors were also not negatively impacted.
- Any impairment from physical or mental fatigue may possibly be mitigated by an adaptive conscious effort to be more conscientious when tired, or increased motivation from the "post-call euphoria".
- The high patient response rate adds validity to our findings. Larger, longer term, multicentre studies will inform of these findings' generalisability to other healthcare settings.

TAKE HOME MESSAGE: Patient satisfaction and prescribing error rates are not detrimentally affected in post-call registrar clinics. The complex relationship between sleep deprivation & doctors' performance remains poorly understood.